STIMSON

POLICY PAPER

Nonproliferation

Structural Bias in Global Nuclear Security

Partnerships in Proliferation Prevention Program & Nuclear Security Program

Bias in Nuclear Security Implementation

Solutions to Identify Threats and Strengthen Security Culture in the United States

By Sneha Nair (Author), Christina McAllister (Author), Annie Trentham (Author), Annina Pluff (Researcher)

October 2023

ABOUT STIMSON

The Stimson Center promotes international security and shared prosperity through applied research and independent analysis, global engagement, and policy innovation.

ABOUT THE PROGRAMS

Partnerships in Proliferation Prevention Program: Empowering the international community to combat WMD proliferation.

Nuclear Security Program: Incentivizing the development of stronger, comprehensive nuclear security standards to reduce the risk posed by nuclear terrorism.

ABOUT THE AUTHORS

Sneha Nair is a research analyst with Stimson's Nuclear Security program and Partnerships in Proliferation Prevention program. Her research focuses primarily on bias in nuclear security, ranging from insider threat mitigation impacts, security culture influence, and applications for emerging technologies. Prior to joining Stimson, Sneha worked at the Comprehensive Nuclear-Test-Ban Treaty Organization and the Organisation for the Prohibition of Chemical Weapons.

Christina McAllister is a senior fellow and director of the Partnerships in Proliferation Prevention program at the Stimson Center. Prior to joining Stimson, Christina supported U.S. Department of Defense offices responsible for nonproliferation and countering weapons of mass destruction (CWMD).

Annie Trentham is a research assistant with Stimson's Partnerships in Proliferation Prevention program. Prior to joining Stimson, Annie worked at the Middle East Institute Education Center.

ACKNOWLEDGMENTS

The authors would like to thank the wide range of colleagues, professional acquaintances, and members of the nuclear security community who contributed their time and expertise to this paper as study participants who engaged with peers in workshops, filled out the anonymous survey, or provided individual interviews. Although we cannot identify them, we greatly appreciate their insights and perspectives. We are also enormously grateful to the U.S. National Nuclear Security Administration, Office of International Nuclear Security's Nuclear Security Women initiative for the financial support for this project.

Please Cite this Publication As

Nair, Sneha, Christina McAllister, and Annie Trentham. "Bias in Nuclear Security Implementation: Solutions to Identify Threats and Strengthen Security Culture in the United States." The Henry L. Stimson Center, 2023.

Cover: Minuteman III launch simulation. U.S. Air Force photo by Staff Sgt. Christopher Ruano.

Table of Contents

1. Executive Summary 3

2. Introduction and Methodology 5

3. Bias and Evolving Challenges to National and Nuclear Security..... 7

4. Bias and DEI Challenges in the Nuclear Security Field 13

5. Bias Mitigation to Strengthen Nuclear Security and Address DEI Challenges..... 17

6. Key Challenges for the United States 21

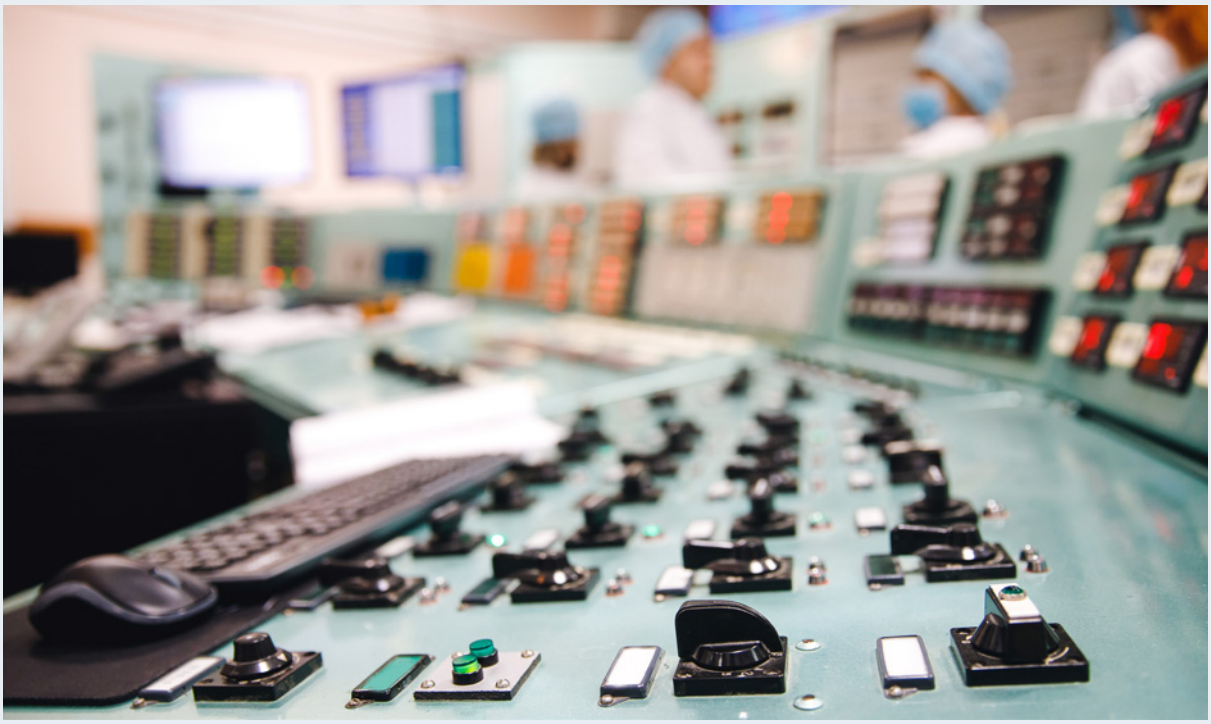
7. Recommendations for a DEI Security Culture in the United States 25

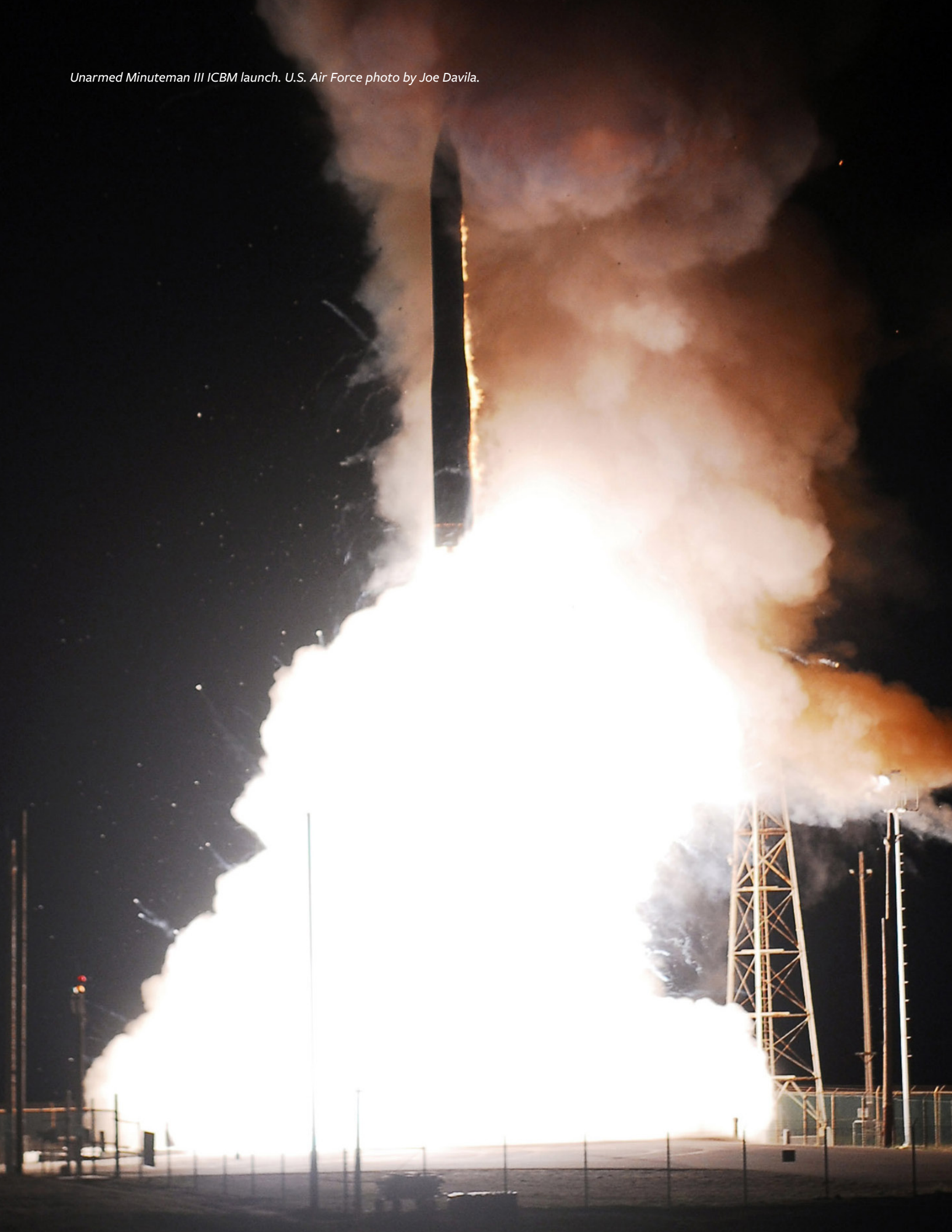
8. Conclusion 45

Endnotes 47

1. Executive Summary

Frameworks for insider threats and personnel reliability and surety programs must be able to adapt to evolving risk factors and nuclear security challenges. In the post-9/11 security environment, foreign, largely Islamic extremist non-state actors were understood to pose the greatest threat to nuclear facilities and security practitioners. Today, domestic violent extremists (DVE), many with white supremacist ideological roots, pose a growing and perhaps still underappreciated threat. This research paper examines how structural and personal bias perpetuate problematic and antiquated constructs of who or what constitutes a nuclear security threat, create a blind spot in security screening procedures and personnel surety programs amid a fast-changing security environment, and lie at the root of persistent diversity, equity, and inclusion (DEI) issues at nuclear facilities. It argues that development of a DEI nuclear security culture is not only a sustainable solution to these long-standing challenges but critical to strengthening the nuclear security community's ability to identify and mitigate threats in a shifting national security landscape.



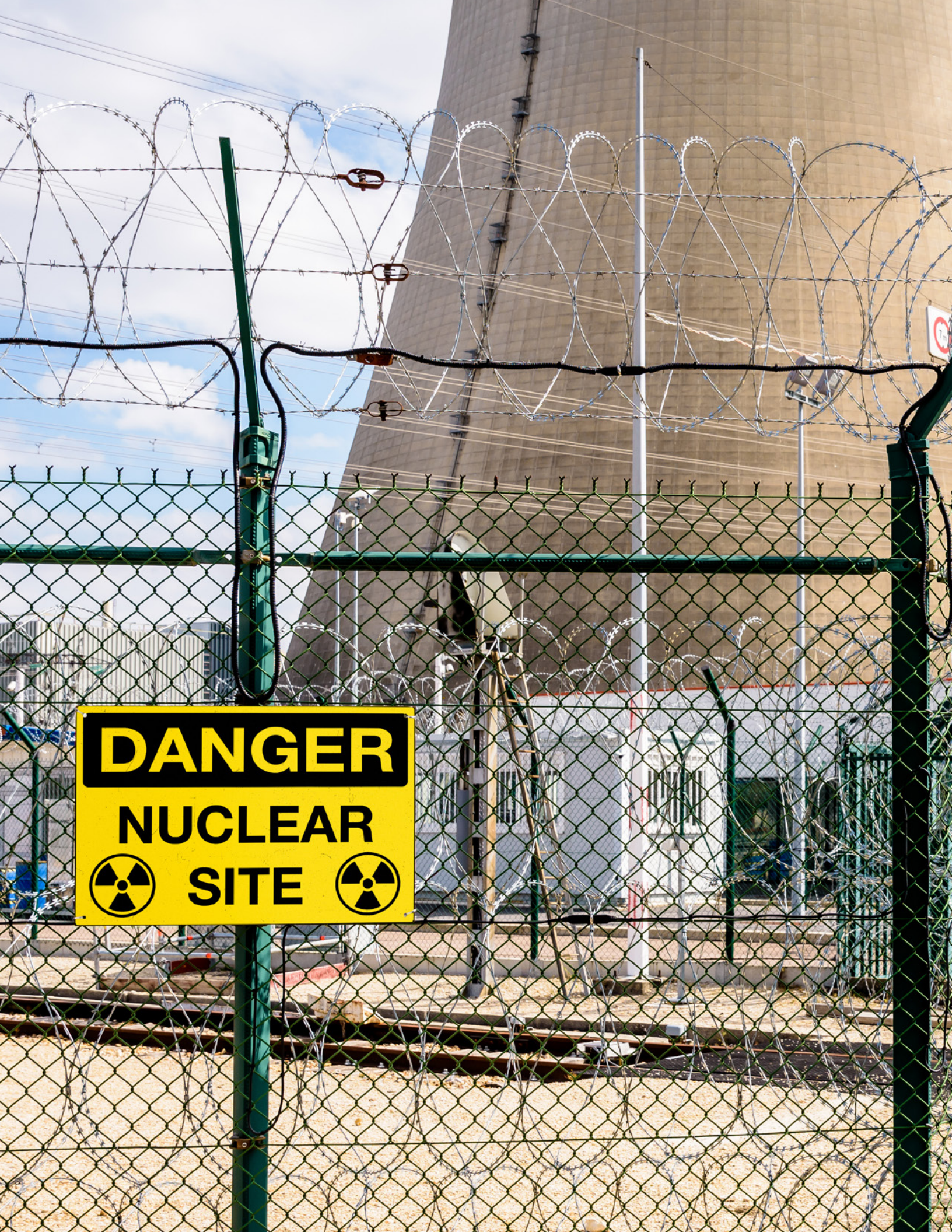


Unarmed Minuteman III ICBM launch. U.S. Air Force photo by Joe Davila.

2. Introduction and Methodology

Nuclear security culture plays a critical role in mitigating the risk that insiders — those vetted and cleared for access to sensitive nuclear sites, material, and information — might betray the trust of their colleagues and supervisors to misuse that access for malicious, harmful purposes. Yet in its very reliance on the "human factor," nuclear security culture is vulnerable to bias.[1] In the United States, structural bias is rooted in particular aspects of the country's history – including slavery and segregation, Native American exclusion policies, selective immigration rules, and unequal treatment of women before the law. These elements of U.S. history, together with more recent events such as the 9/11 attacks by Islamic extremists have shaped today's homogenous U.S. security establishment and culture, and by extension, its nuclear security culture as one focused on threats that are external or "foreign." Focus on DEI efforts across U.S. government and private sector workplaces in recent years is a helpful proxy for bias mitigation in the nuclear field. But while security teams may understand the benefit of greater diversity to their employer and participate in organization-wide DEI training, recruitment, and other initiatives, this exploratory research effort indicates that decades of assumptions underpinning today's security policy and procedures remain largely unquestioned and unexamined — and the role of bias in nuclear security remains largely unaddressed. DEI initiatives remain siloed and surface-level in many organizations, with broader structural issues across U.S. society hobbling efforts to make meaningful progress. This publication identifies the risk posed by structural and unconscious biases that may allow DVE working within the nuclear security establishment to go unnoticed. In the same way that national security organizations failed to adequately address the domestic violent extremist threat ahead of the January 6, 2021, attack on the U.S. Capitol, the nuclear security field overlooks or discounts similar risks. Our study found that a deeper and more intersectional approach is needed to address nuclear security vulnerabilities as well as persistent DEI challenges in the field — both rooted in individual and structural biases. The results of the research suggest that the most effective way to sustainably mitigate bias in the context of U.S. nuclear security is to apply a diverse, equitable, and inclusive nuclear security culture framework that would integrate DEI directly and holistically into the U.S. nuclear security architecture itself.

To carry out this study, the Stimson Center research team conducted a broad literature review as well as small, semi-structured virtual workshops for government, industry, and civil society specialists, policymakers, and practitioners in the field of nuclear security and DEI in the nuclear field. A total of 22 participants were divided across four workshop sessions, two of which focused on analyzing domestic violent extremist threats to nuclear security and the role of bias in identifying nuclear security threats, and two of which focused on analyzing DEI challenges and the intersection with bias in the nuclear security field. The Stimson team also developed and distributed an anonymous survey to interested stakeholders and conducted ten semi-structured, anonymous interviews with selected experts, practitioners, and leaders from government, academia, and private industry. Because of the low response rate to the survey (seven total responses), the research team has incorporated survey data into this report only informally, as illustration or anecdote rather than as statistically significant data. No personally identifiable information gathered as part of the human subject research conducted in the study is used in this report, although deidentified anecdotes, experiences, opinions, and other open-source material collected is included throughout. All interviews were conducted in confidentiality, and the names of interviewees are withheld by mutual agreement.


DANGER
NUCLEAR
SITE

3. Bias and Evolving Challenges to National and Nuclear Security

The January 6, 2021, attack on the U.S. Capitol building served as a catalyst for renewed attention on insider threats and domestic violent extremism (DVE) as national security priorities.[2] The Department of Justice (DOJ) investigation has revealed that many participants adhered to anti-government, far-right ideologies, and that some subscribed to a particularly extreme, violent ideology focused on attacking critical infrastructure and nuclear facilities to "accelerate" social disorder and a white supremacist future.

The failure of national security experts to appropriately anticipate and mitigate the Capitol breach raises questions about what the national security bureaucracy perceives as a threat, who is considered a threat, and what measures are considered appropriate to manage such threats.

Since the January 6 Capitol breach, the Biden administration has taken steps to identify "racially or ethnically motivated violent extremists," specifically white supremacists, as the greatest domestic threat facing the United States.[3] A Federal Bureau of Investigation (FBI) and Department of Homeland Security (DHS) report argued that the most significant threat facing the United States consists of "lone offenders, often radicalized online, who look to attack soft targets…Many of these violent extremists are motivated and inspired by a mix of socio-political goals and personal grievances against their targets."[4] The report also stated that of the discussed actors, domestic violent extremists represent one of the most persistent threats to the United States today.[5]

This emerging DVE landscape poses a particular threat to nuclear facilities as elements of critical national infrastructure and unique targets for groups seeking to "accelerate" toward a white supremacist society. Nuclear facilities have become increasingly popular targets of such violent actions, and understanding the nature of the DVE threat is essential for understanding how bias undermines the current framework for national and nuclear security.

DVE Threat Dimensions

This report defines domestic violent extremists as

> **[m]embers of any U.S.-based ideological movement, that without foreign influence, seeks to advance radical political, social, or cultural goals through criminal acts of violence against individuals, organizations, or power structures that threaten the ideological mission of the movement.**[6]

As noted by the Biden administration and the U.S. intelligence community, the particular threat of racially motivated, white supremacist DVE is the most alarming. However, DVE is an all-encompassing category that includes the adherents of a variety of causes and ideologies, and DVE groups often espouse multiple ideologies concurrently.

One notably dangerous aspect of many current DVE groups is the adoption of accelerationist goals in tandem with other ideologies. In this context, accelerationism usually implies assassinations, murders, mass shootings, terrorist attacks, and other acts of violence to "accelerate" a racial conflict in hopes of white victory and the creation of a white utopian society.[7]

The Atomwaffen Division (AWD), for example, upholds white supremacist, antisemitic, fascist, and anti-government beliefs and also advocates for accelerating the world into a race war through acts of violence, terrorism, shootings, and terrorist attacks.[8] AWD also advocates for the use of nuclear weapons and "dirty bombs" to bring about the end of the world, going so far as to use the iconic ionizing radiation trefoil symbol in their logo as well as the German word for atomic weapon (*atomwaffen*) in their name.[9] Although AWD disbanded in 2017 when founder Brandon Russell was arrested for illegal possession of firearms and explosives, the accelerationist ideology continued through the subsequent domestic iterations of the group, such as the National Socialist Resistance Front (also known as the National Socialist Organization). The National Socialist Resistance Front is still operating, albeit in a much smaller and weaker capacity. However, members of AWD that escaped legal prosecution are still active within the far-right DVE sphere with different organizations. The mobility of membership within online hate groups allows for members to quickly leave if they sense they have come under surveillance and reconfigure under a new group.

Targeting Critical Infrastructure

A common aspect of DVE accelerationism is the emphasis on attacking critical infrastructure, including nuclear facilities and power plants. Attacks on U.S. energy infrastructure are increasing.[10] DVE actors often target regional power substations in order to cause economic distress and civil unrest, with the hopes that enough attacks will cause cascading critical infrastructure failures and lead to blackouts, failures of local government, loss of law and order, and eventually a race war or the fall of civilization. A leading expert on white supremacist terrorism interviewed for this study noted that *The Turner Diaries*, a foundational text for white supremacist accelerationists, features nuclear weapons, materials, and facilities as "windows of opportunity" to destabilize existing power relations. Many extremist groups use *The Turner Diaries* as a playbook with instructions on how to overthrow the U.S. government and accelerate the fall of civilization.[11]

Recent incidents on infrastructure include six "intrusion events" at Florida power substations in September 2022; six attacks on substations in the U.S. Northwest in November and December 2022; four substations vandalized in Washington State, cutting power to 14,000 on Christmas Day, 2022; and a December 2022 North Carolina "targeted attack that left thousands without power."[12] Most notably, Baltimore, a majority Black city, was the target of a white supremacist accelerationist plot from AWD's Russell in early 2023.[13] Prior to targeting the Baltimore grid, Russell had expressed interest in targeting the Turkey Point Nuclear Power Plant in Florida.[14]

Military and DVE Recruitment

The January 6 Capitol breach also became an important focal point for examining extremism trends in the military. Participants with a military background were approximately four times more likely to be members of a domestic violent extremist organization, with members from the Marines (47.8%) and the Army (41.3%) constituting the majority of January 6 military arrestees.[15] In 2021, 6.4% of all U.S. domestic terrorist incidents were linked to active-duty and reserve military personnel—an increase from 1.5% in 2019.[16] Studies have found that far-right extremist groups intentionally target veterans and active military personnel in their recruitment tactics to gain military training, weaponry, and insider knowledge of how structures of power operate.[17]

Members of AWD are no exception, as many notable members were either veterans or active-duty military, or were planning on joining to recruit and radicalize others. The founder of AWD had previously been in the Florida National Guard.[18] Vasillios Pistolis, who was a U.S. Marine Corps lance corporal during his AWD membership, made headlines when he attended the "Unite the Right" rally in Charlottesville, Virginia, and "cracked skulls" of counter-protesters in fights.[19] Interviews with ex-AWD members have indicated that AWD actively recruits veterans and uses them for their military training and weapons knowledge.

This targeted recruitment presents a risk to the surety of the nuclear security practitioner pipeline as the military plays a central role in the physical protection of U.S. nuclear materials, from military personnel handling nuclear weapons to veterans working in nuclear power plant security jobs. All holding companies that own five or more nuclear power plants in the U.S. have veteran-specific hiring initiatives, as veterans are attractive hires given their military experience, security expertise, and the fact that they are "pre-vetted" by the nature of their previous employment.[20] Public discourse surrounding extremism within the military often focuses on recruitment or active-duty members, leaving veteran radicalization neglected.[21] However, in the nuclear security context, extremism and radicalization both within the military and among veterans pose threats to organizational security culture by creating toxic workplaces where individuals are resistant to sharing concerns about discriminatory abuse, hostility, or incivility.[22] Extremism in the military has manifested in a number of ways—attacks and hate crimes against fellow service members and civilians, theft of military equipment, security breaches, and harm to morale, unit cohesion, personnel retention, recruiting efforts, and mission success.[23]

Bias in Threat Identification

Threat identification is the process by which individuals, materials, organizations, or ideologies are viewed as a risk to the safety and security of other individuals, materials, organizations, or ideologies that are viewed as worthy of protection. Bias can enter this process at any stage, such as through informing what is considered a threat and what is considered worthy of protection. Unchecked and unmitigated biases within this process may create vulnerabilities and security gaps, as genuine threats are not perceived as such and are allowed to perpetuate harm.

Historically, the domestic construct of a 'threat' was antithetical to the idea of an 'American.'[24] This construct of 'American' has typically been biased toward the white, male, heteronormative population. Individuals who do not fit this image are often subject to additional scrutiny under the national security apparatus — irrespective of the status of citizenship, criminal background, or threat to the United States.[25]

This 'othering' of non-white and otherwise 'non-American' presenting individuals may reinforce problematic biases in national and nuclear security frameworks, creating an 'us' vs 'them' dynamic.[26] While insider threat programs are designed to identify 'the threat among us,' the historically homogenous nature of the national security field dominated by white men in the United States means that affinity bias may favor those who look like the demographic in charge, and make them less likely to be considered threats.[27] Structural bias is reflected not only in the design of the national security clearance process, which often examines those with foreign ties or from underrepresented groups more closely, but also in insider threat programs which monitor personnel behavior in certain categories and rely on inherently subjective co-worker and supervisor assessments of that behavior. [28] As laid out in more detail in Section 4, monitoring of changes in finances, substance abuse, and mental health may disproportionately affect certain underrepresented demographic groups. At the same time, as laid out later in this section, misbehaviors like sexual harassment or racist abuse that are directed at historically excluded demographics may tend to be overlooked or discounted in continuous evaluation procedures. The Capitol breach demonstrates the dangers of allowing such biased understandings of threat to go unchecked and illustrates how "[the] way the U.S. defines threat does not adequately capture the challenges many people of color feel in America[,]" by largely failing to account for the security threats posed by individuals, governments, or crime.[29] This trend is reflective of a broader national security vulnerability that trickles down into nuclear security processes and procedures.

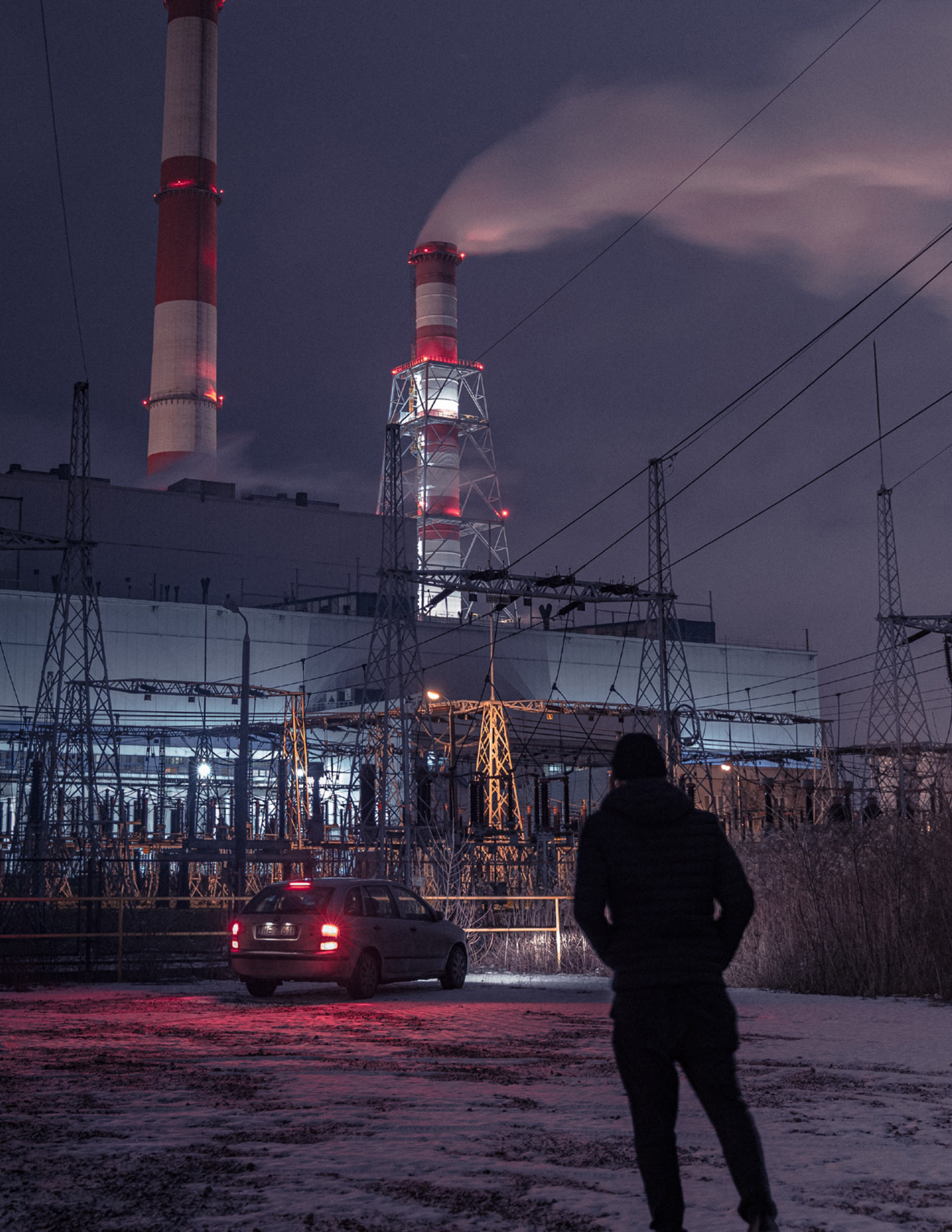
This construct of threat as 'other' in national and nuclear security can be clearly seen in how insider threats to nuclear facilities and organizations have historically been identified as primarily foreign threats, often those of Middle Eastern descent or background.[30] While insider threats like Sharif Mobley have demonstrated that foreign ideological radicalization has been a nuclear security concern in the past, continued focus on threats from abroad discounts the DVE threat identified as the predominant domestic terrorism concern of the last decade.[31] Bias that favors white applicants is seen throughout the security system, such as in the FBI's increased surveillance, additional security screenings, and disproportionate rates of demotions and dismissals of individuals and employees with foreign ties or relationships, especially those with Middle Eastern or Central Asian countries.[32] However, with the rise in far-right DVE, it is possible for malicious actors to circumvent the threat identification process, as their appearance, background, and beliefs do not constitute a threat by conventional understandings. One workshop participant with prior government experience articulated this point of view, remarking on affinity bias within the security field, or a tendency for investigators to sign off on clearances if a person has a similar background or looks like them.[33] Another civil society workshop participant expressed the view that the U.S. security system is explicitly designed to overlook white supremacist threats.[34] Other interviewees remarked that the nuclear security space is not currently evaluating far-right DVE appropriately and expressed concern about the lack of attention that the nuclear field is giving these threats.[35] The Department of Energy (DOE) has come under particular scrutiny by the Government Accountability Office (GAO) for not fully implementing its insider threat mitigation program at eight sites in the nuclear security enterprise, leaving security vulnerabilities open for DVE actors to take advantage of.[36] The research team observed that most DOE personnel based at U.S. facilities that they invited to participate in this study initially did not understand why they were being asked to participate nor did they feel qualified to do so despite their demonstrated international nuclear security implementation expertise, suggests that nuclear security work within the agency may be siloed between international implementation work and domestic nuclear security culture practice for personnel – and that this disconnect may be rooted in some of the challenges observed in the GAO report. Notably, however, private industry study participants expressed confidence in the objectivity and reliability of standard personnel clearance and behavioral observation programs, an industry-wide system to share information between facilities about personnel security infractions and loss of clearance, periodic clearance re-investigations, and collaborative

relationships with the FBI, the Nuclear Regulatory Commission, and local law enforcement on identifying relevant threats.[37]

Bias in threat identification has manifested through the national security system in a variety of ways. The example of Matthew Gebert is a case study of a white supremacist granted continuous access to classified government information despite extremist behavior. Joining the State Department in 2013 as a Presidential Management Fellow — a prestigious program focused on developing a "cadre of future government leaders" — Gebert embedded himself within the national security bureaucracy, within an organization that acts as a major stakeholder and decision-maker for U.S. nuclear policy, while taking on an active role within the white supremacist movement. Though he was investigated twice by federal officials in order to receive his high-level clearance, his extensive online involvement in the white power movement went unnoticed.[38] In fact, as Hannah Gais writes, "[the] year after he marched alongside Klansmen, neo-Nazis, white nationalists, and other far-right extremists at the 2017 Unite the Right rally in Charlottesville, Virginia, Gebert's security clearance was renewed."[39] Under his online persona, "Coach Finstock," he appeared on varying podcasts and online forums. "[Whites] need a country of our own with nukes, and we will retake this thing lickety split," Gebert said on a May 2018 episode of "The Fatherland," a white nationalist podcast. "That's all that we need. We need a country founded for white people with a nuclear deterrent. And you watch how the world trembles."[40] On August 7, 2019, the State Department suspended him and launched an investigation in response to a report from Hatewatch.[41]

Gebert is not the only case of the security system missing warning signs that should have caused loss of access to the government or the nuclear security bureaucracy. Ashli Babbitt, a U.S. Air Force (USAF) veteran and former nuclear power plant security guard who was shot and killed while participating in the January 6 Capitol breach, became radicalized online after leaving the Air Force, where she had already exhibited a history of insubordinate behavior that prevented her from rising through the ranks.[42] After the Air Force, she was employed as a security guard at Calvert Cliffs Nuclear Power Plant in Maryland from 2015 to 2017.[43] During this time, she also had two protective orders filed against her, one in 2016 and the other in 2017. The plaintiff said the lawyer defending Babbitt made repeated references to her employment at the local nuclear power plant and years of military service; Babbitt was acquitted of the criminal charges.[44] Despite all of these signs, and her social media support for debunked conspiracy theories as early as 2016, Babbitt stayed on in a security role at the Calvert Cliffs Nuclear Power Plant from 2015 to 2017.[45] Babbitt's security role at a nuclear power plant, in combination with her ideological beliefs, is troubling — especially when considering the appeal of nuclear infrastructure as a target for extremists. Babbitt's case also concerned this study's industry participants, who expressed that the insider threat mitigation measures in place across the private sector should have flagged her as a risk if implemented properly. One participating industry security professional was not aware that Babbitt had been employed in nuclear security.[46]

The security failures in these cases of white, U.S.-born citizens stand in contrast to the increased scrutiny of individuals with foreign ties. One research interviewee who took part in a training on bias as part of the DOD stand-down in 2021 to address extremism in the ranks recounted the story of a training session participant with Iranian parents who had joined the military to be in the intelligence community. He graduated from intelligence school at the top of his class but was pulled aside after graduation and was told that his security clearance application had been rejected because of his parents' nationality. Deployed instead to Iraq in a low-level position, he served alongside some Special Forces soldiers who valued his Farsi language skills, wanted him to join their work, and discovered that his security clearance paperwork had not only not been rejected, but had never been submitted.[47]



4. Bias and DEI Challenges in the Nuclear Security Field

Just as bias obscures DVE threats within the United States, structural biases contribute to DEI challenges affecting U.S. nuclear security organizations. In particular, the security systems that are so fundamental to the field compound the "everyday" structural bias affecting how marginalized groups access and operate within the nuclear security field.

Since the killing of George Floyd in 2020, DEI challenges have become a prominent issue in workplace culture across all industries and organizations. Many organizations with nuclear security missions have made notable strides to start addressing largely homogenous workforces and related issues, such as through the implementation of employee resource groups, "diversity councils," and efforts to ensure equitable pay for employees. However, these initiatives are just beginning to tackle the structural biases that underlie the sector's DEI challenges.

Diversity, Equity, and Inclusion Challenges

The nuclear field has historically lacked diversity and fallen short in ensuring equity and inclusion for all stakeholders. Branches of the field, such as energy, nonproliferation, and safety, have lacked diversity of racial representation, gender, sexuality, socio-economic class, and other marginalized demographics.[48] According to New America's report "The 'Consensual Straitjacket': Four Decades of Women in Nuclear Security," only five women held a senior leadership position in the DOE from the 1970s until 2019, only one of whom was a woman of color.[49] The number of female National Security Advisors was even lower — two women held senior leadership positions, both of whom were women of color.[50] Data regarding the nuclear security community demographics, especially within private organizations, is sparse. However, available data reflects this trend of marginalized communities remaining marginalized in the nuclear field.

Department of Energy: Across the U.S. National Laboratories, several of which have nuclear security-related missions, female employees make up just 31.1% of the laboratory workforce, and under-represented minorities (Black, African American, Hispanic, Latino, American Indian, and Alaskan Native) represent 20.43% of the laboratory workforce.[51] This demographic data is similar to that of the National Nuclear Security Administration (NNSA) as well, where women make up 32% of the workforce and non-white demographic groups make up 33% of the workforce.[52] For the National Laboratories, the disparity between percentages of men and women widens further for technical positions such as research/technical management, technical research staff, postdoctoral staff, and graduate student staff versus operations-focused positions, such as operations management and operations support staff.[53] Women staff only 19.83% of the research/technical management positions and 20.49% of the technical research staff positions compared to 35.04% of the operations management positions and 43.93% of the operations support staff positions.[54] Within NNSA's

security forces responsible for securing weapons-grade nuclear material, women made up between 0% and 8% of the force as of 2020, depending on the site.[55]

Department of Defense: The DOD's 2022 series of infographics about women, Black/African Americans, Asian American/Pacific Islanders, and Hispanics in the services presents demographic data on these minority groups without providing comparative data on other minority or majority demographics. According to these "portraits," the percentages of women and minority civilians in GS-14 and GS-15 positions have increased since fiscal year 2017, with the Black/African American demographic increasing the most at 13.5% from 2017 to 2022.[56] A 2020 report on diversity and inclusion highlighted an over-representation of minorities within enlisted ranks when compared to the eligible U.S. population for Black/African American and Hispanic groups and a contrasting under-representation of minorities within officer ranks.[57] The report also showed a generally lower percentage of female officers being promoted through the ranks than male officers, although higher percentages of self-identified Hispanic and "other" women were promoted to the higher O-4 to O-6 ranks than their male counterparts.[58]

The DOD's nuclear security mandate is also carried out through the Navy and the Air Force, as they manage the storage, use, transportation, etc., of the U.S. stockpile of nuclear weapons. The Navy's 2021 demographic report showed that 79.5% of active Navy members identify as male and 20.5% as female, and 37.1% of Navy members identify with racial minority groups, with 16.8% identifying as Hispanic or Latino.[59] A previous 2020 review focused on naval officer demographics, noting that Black/African American, Hispanic, and female officer populations were consistently below their proportion of the eligible U.S. population.[60] Additionally, infographics highlighted that while officer racial diversity has increased 2% from 2015 to 2020 as the result of an increase in the numbers of Black and multiracial officers, enlisted racial diversity has decreased 1% because of a 3% decrease in multiracial enlistees.[61] Gender diversity in the Navy has increased since 2015 by 2% for both officers and enlistees.[62] The USAF's 2023 demographics report detailed that women make up 21.4% of its force, 20.9% of enlistees, and 23.3% of officers.[63] The force is 15% Black or African American, 5.1% multiracial, 4.9% Asian, and 17% Hispanic or Latino ethnicity.[64] The Air Force's previous 2020 report highlighted disparities across a variety of areas, such as military justice and discipline, investigations, accessions, promotions, and retentions.[65] Similar to broad trends from the DOD reports, USAF has noted racial disparities in civilian and officer promotions, as well as racial disparity in technical or highly skilled positions.[66]

Federal Bureau of Investigation: The FBI carries out its nuclear security mandate through providing intelligence information to relevant nuclear stakeholders, protecting against nuclear accidents and incidents, and combatting terrorism and violent extremism. In May 2023, the FBI released a short diversity report that briefly outlined major demographics of the workforce, such as representation by leadership level and by career path. Since fiscal year 2018, the FBI has seen an increase among racial/ethnic minorities and female employees across all career levels.[67] The report lacked a more detailed breakdown, such as data about the number of intelligence analysts, data about statistics from previous years, or statistical analysis.

Office of the Director of National Intelligence: ODNI has a similar nuclear security mandate as the FBI, as it is responsible for organizing and disseminating relevant intelligence about nuclear security threats to the appropriate stakeholders. ODNI's 2021 annual demographic report, the most recent available, details diversity within the broader intelligence community and provides statistical analysis on demographic data. The report states that the intelligence community does not meet any government hiring benchmarks for minorities, women, or people with disabilities.[68] Minorities, women, and people with disabilities held fewer supervisory positions, were hired at lower pay grades, held more non-technical positions, and were more likely

to resign instead of retiring across the board.[69] The report also states that "lower minority promotion rates have been a trend since 2017" and "[intelligence community] minority officer retirements and resignations have increased."[70] It also highlights that "the highest attrition of women federal officers is [among] those with 20+ years of experience."[71]

Industry: The DOE publishes aggregate workforce demographic analysis for the private energy sector through the Energy & Employment report (USEER). According to the 2023 report, the nuclear sector employed over 10% fewer women than the national workforce average.[72] The nuclear industry comprises more non-white employees than the national average, which the USEER attributes to the numbers of workers who identified as Asian (10% in nuclear field as opposed to 7% national average), two or more races (5% as opposed to 4%), American Indian or other Alaskan Native (3% as opposed to <1%), and Native Hawaiian or other Pacific Islander (1% as opposed to <1%).[73] However, percentages of self-identified Hispanic and Black or African American workers were below the national average.[74] The USEER does not report or analyze any information regarding demographics of retention or promotion.

Structural Bias and DEI Challenges

"Structural bias" is defined as "a tendency for the procedures and practices of particular institutions to operate in ways which result in certain social groups being advantaged or favored and others being disadvantaged or devalued."[75]

The nuclear security field is affected by the same kinds of structural bias as others, particularly the science, technology, engineering, and mathematics (STEM) fields. Studies show that women and minorities enter and graduate from undergraduate and graduate-level STEM programs at lower rates, reflecting how women and minorities are systematically tracked away from science and math throughout their education.[76] Bias is often cited as one of the main factors keeping women specifically away from STEM majors and fields, as research shows people associate science and math with "male" and the humanities and arts with "female."[77] Security, like STEM fields and the military, has also traditionally been understood as a "masculine" career field not appropriate for women, with attitudes only gradually changing in recent decades.[78] A workshop participant confirmed that hiring female security employees, especially female supervisors and specialists, is particularly difficult, although they did not speculate as to why that might be.[79] Several study participants noted that veteran hiring preferences in the nuclear field may act as another barrier to diversity.[80] Others described non-competitive hiring practices in nuclear security-related workplaces as serving to retain retiring military officers (frequently white males) and to limit access to the field by more diverse candidates.[81]

For those who do enter the field, structural bias may manifest in a variety of ways that can make underrepresented groups feel unseen or excluded, contribute to high attrition/low retention rates over time, and hinder career advancement. For example, one workshop participant shared a story about her challenges carrying heavy equipment for a nuclear safeguards verification role, and how men often carried her tools for her. Another participant separately reaffirmed this point, stating that some of the monitoring equipment weighs about 40 pounds and is worn on the body. Participants noted the toll such burdens take on all workers, not just the ones most obviously affected, as well as easy-to-implement practices or measures to ease this burden for all (e.g., wheeled equipment caddies) without signaling women as "weaker links."[82] Women in the broader national security and nuclear security fields have long reported sexist comments from male coworkers and colleagues based on their appearance, other women's appearances, their careers,

their educations, and their families.[83] Within the NNSA, a 2021 GAO report highlighted that individuals within the organization who faced harassment were unlikely to report it.[84] The report cited variation in adherence to recommended practices by the agency and its contractors as a key issue, which raises concerns about similar structural biases working against equity and inclusion within the broader nuclear security field.[85] One nuclear industry executive noted in an interview that one requirement for career advancement in the field is becoming a licensed operator, but that shift-work requirements that are part of that process serve as a disincentive to some women engineers (presumably those with young families).[86] One industry workshop participant stated that women who hold lower positions "don't want" to take on supervisory roles. They described their attempts to mentor a female security officer on their team, encouraging her to seek promotions, only for her to resist leaving her current position because of a concern about being "tokenized," or promoted only for her identity as a woman rather than for the quality of her work.[87]

In addition to these kinds of structural bias, the nuclear security field has particularly stringent security clearance and ongoing personnel surety requirements where structural bias may pose additional disproportionate barriers to access for marginalized groups. For example, some interviewees pointed to criminal records, drug offenses, and mental health interventions that are considered as part of U.S. security clearance investigations and may serve in that context to exclude segments of the population subject to racialized law enforcement practices and higher sentencing and incarceration rates.[88] A RAND Corporation study of the potential for racial bias in the security clearance process cited some of these same potential exclusionary factors as well as financial considerations.[89] Those who get approved for the highest-level clearances appropriate for nuclear security work will naturally tend to be "really easy-to-clear, white, middle-class people. And not people who had to struggle," said another of this study's interviewees.[90] Another workshop participant cited their years of service to the U.S. nuclear security sector as a foreign national, a status that nevertheless limits their ability to progress further in their career, and recommended a thorough reconsideration of the "security bubble" and what really needs to be included within it.[91] Another workshop participant shared an anecdote illustrating how daily physical security procedures for cleared employees can create uncomfortable situations for women: physical security screening procedures at one facility disproportionately flagged women who wore underwire bras, thus creating barriers for these women to access the facility to do their job.[92] One interviewee felt that the security clearance process has not had its biases examined or removed and that restrictive requirements are perpetuated by individuals attempting to gain and retain access to the government.[93]

Women and minorities are not the only demographics that face undue scrutiny in the nuclear security field. Study participants noted a variety of biases at play in the field, including those related to age, military veteran status, contractor or federal employee status, and type and level of academic credentials.[94] In particular, bias against those without a technical or scientific background, or who do not have advanced educational credentials, often overlaps with an individual's gender identity, heritage, and socio-economic upbringing, resulting in white men staffing the technical and research-focused roles. One interviewee described how they felt the need to obtain a PhD in order to have their thoughts and opinions respected by technical staff, as highly trained technical staff often disregarded inputs, especially DEI-related inputs, from non-technical staff. They felt it was important to couch their thoughts in a scientific language or dataset for the technical staff to acknowledge and respect their inputs.[95] While the nuclear security field does require a high level of technical expertise, lack of technical qualifications has been used exclude individuals who might have valuable inputs from contributing to decision-making.[96] Former Under Secretary of Defense for Policy Christine Wormuth stated, "it's harder for people who have good ideas about those kinds of issues who don't have the technical fluency to have their voices heard."[97]

5. Bias Mitigation to Strengthen Nuclear Security and Address DEI Challenges

Understanding how bias contributes to both DVE and DEI challenges in the nuclear security field is an important precursor to understanding how mitigating bias through DEI initiatives can improve nuclear security implementation outcomes.

When structural bias enforces a norm and reduces the amount of diversity within an organization, not only does the organization lose a diversity of valuable input, but the political atmosphere can adopt characteristics of an "echo chamber." Echo chambers are environments where individuals encounter beliefs and opinions that are similar to their own and are not confronted with alternative perspectives, often resulting in the amplification and radicalization of such beliefs.[98] Echo chambers within the nuclear security field become more likely the less diversity of thought and background is present, which could result in the adoption of extremist political beliefs in some environments. The potential for such radicalization to occur within the nuclear security field creates a security issue for all nuclear facilities, stakeholders, and organizations, as it could result in compromised security measures. One senior interviewee for this project articulated this idea, stating that "when you have less diversity, then if you do have those little pockets of people with extreme ideals, there's more room for that to grow and fester, because there's nobody — there's no voice countering that."[99]

As illustrated in Section 3, the threat posed by some accelerationist DVE groups to nuclear facilities and broader national security infrastructure may go undetected if a white-majority security workforce does not perceive these white supremacist ideological leanings, or associated misogynistic, racist, or other bigoted misbehavior, as indicators of a relevant threat.[100] Study interviewees concurred that there are structural problems with how nuclear security in the United States addresses DVE risk.[101] One expert said, of the DVE threat, "it's not clear to me that it's adequately considered in the design basis threat [(DBT) of nuclear facilities]."[102] Another noted that "[until] we have an understanding , or even acceptance, of what the threat looks like, we can't be blind to the demographics of those who… [perpetuate] violent extremism [in the United States]."[103] An anonymous survey respondent also stated that neither personnel screening nor workforce security training placed enough emphasis on DVE indicators. Diversifying the perspectives included in nuclear security decision-making can expand the definition of who or what constitutes a "threat" to a nuclear facility.[104] DEI experts working in the nuclear workforce concurred that most people still assume that every terrorist or violent extremist threat looks like a foreign-based threat, with one participant specifically identifying a DBT bias toward "threats that look Islamic, for example, and also Asian," noting a specific focus on China and Islamic extremism.[105]

This dynamic of "othering" is "vulnerable to confirmation and affinity biases when it comes to assessing threats from within, because practitioners who have a preconceived notion of a threat as 'other' or 'foreign' are less likely to consider individuals who look like them or have similar lived experiences as security

risks."[106] Some participants in this study noted that existing security clearance processes and insider threat monitoring procedures do not accurately screen for potential DVE risks.[107] And one workshop participant expressed the belief that the United States' overburdened security clearance system was especially vulnerable to affinity bias, with overstretched investigators signing off more quickly on clearances for people like themselves.[108] Yet reports indicate that at least two recent insider threats — Jack Teixera (who leaked classified material on the war in Ukraine on social media) and an unnamed engineer working at Arnold Air Force Base in Tennessee who compromised USAF communications systems — engaged in misogynistic, racist, or other bigoted misbehavior.[109] Teixera also had a history of making violent threats, raising questions about how he was able to obtain a security clearance in the first place.[110] These reports suggest that U.S. workplaces where such toxic actions go unreported, or where reports are not taken seriously by decision-makers because they disproportionately affect minority demographics, may be at heightened risk for insider threats.

The nuclear security sector is also vulnerable to these kinds of failures of organizational DEI culture. In 2019, a member of the guard force at the U.S. Nevada National Security Site was sexually assaulted during a force-on-force exercise; after reporting the incident, she was harassed, ostracized, and eventually fired.[111] The Government Accountability Office in a related report noted that despite few other reports of harassment, the extent of the problem was unclear; research has shown that reports and complaints are the least common response, and NNSA did not survey its employees on the topic as suggested by the U.S. Equal Employment Opportunity Commission (EEOC).[112] Educational levels and specializations can also become a basis for discrimination. One non-technical nuclear security policymaker shared in an interview that they experience bias from their technical staff, who assume they do not have the expertise to do their duties appropriately.[113] Multiple interviewees and workshop participants cited examples of technical experts rising to managerial positions within a nuclear workplace, but not being given the managerial training or leadership skills to develop healthy work environments for their employees.[114] Another issue flagged in these interviews and workshops was leadership exemption from human reliability programs or security screenings because they are deemed trustworthy by default.[115]

Beyond serving as a potential breeding ground for extremists, toxic workplaces create broader and more fundamental nuclear security vulnerabilities. Without holistically integrated DEI security culture, nuclear facilities may fail to protect personnel from abuse, hostility, or incivility on the basis of race, gender, sexual orientation, or any other characteristic. As a result, individuals may be less likely to share concerns.[116] An open environment for all staff to share concerns, whether about the behavior of others in general or about specific nuclear security issues, is fundamental to nuclear security culture as defined by both the International Atomic Energy Agency (IAEA) and the World Institute for Nuclear Security (WINS). Other impacts may include "elevated levels of anxiety, stress, depression, health issues, absenteeism, and burnout."[117] This, in turn, may create other kinds of insider threats from disgruntled, disaffected employees in addition to impacting how a guard force operates and the process by which organizations identify and mitigate potential security vulnerabilities.[118]

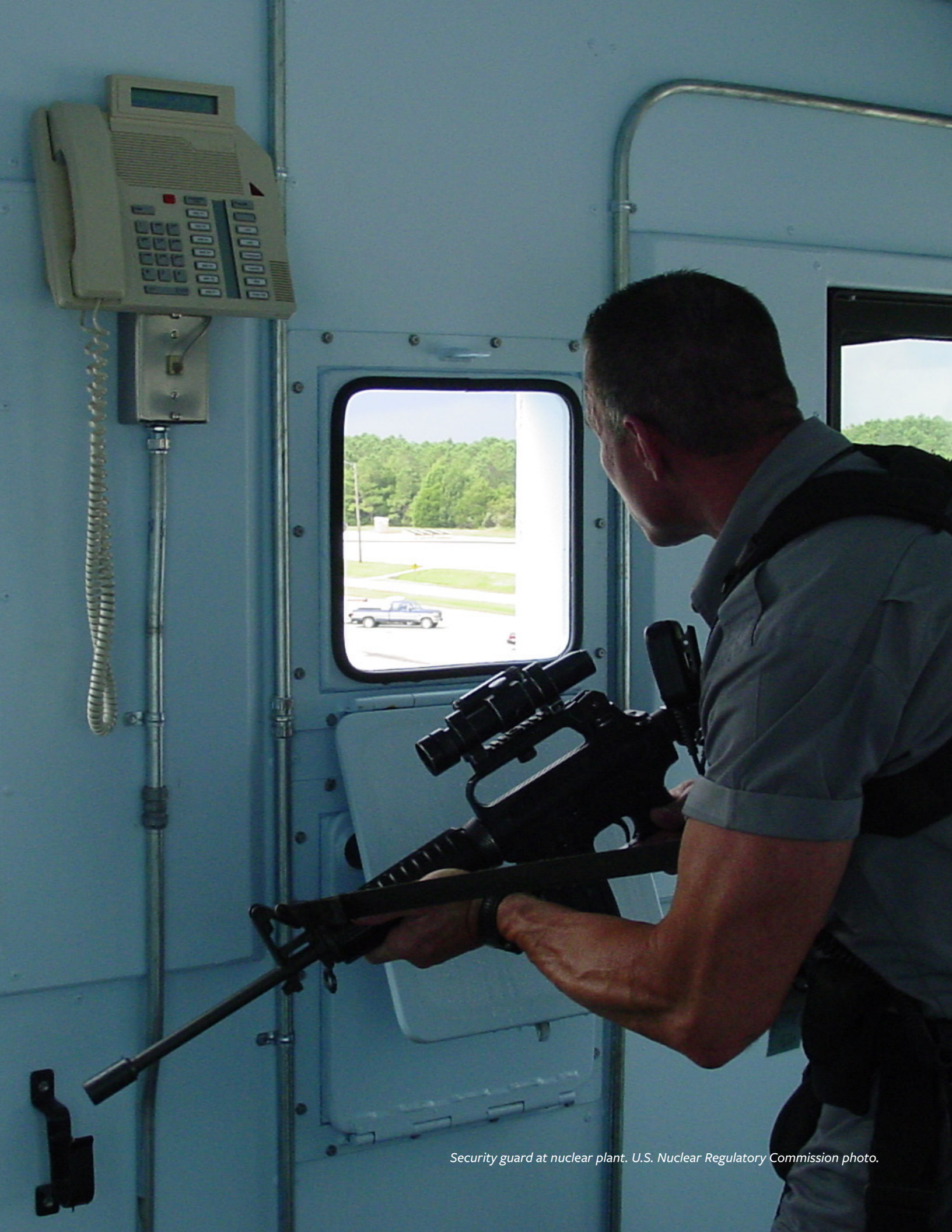
Thus, mainstreaming DEI into nuclear security culture can support insider threat mitigation efforts and reduce toxicity in a nuclear workplace — both of which would strengthen nuclear security implementation in the long run. Organizations have a responsibility to ensure that all employees understand not only their role in creating and sustaining a nuclear security culture, but how this role is facilitated by embracing DEI values. Creating a security culture where managers are empowered to create good working environments with a culture of mutual respect, and employees feel that complaints or concerns about their peers,

particularly those related to racism, sexism, or homophobia, will be taken seriously, and processed without repercussion, can improve the retention and performance of all employees as well as mitigate potential extremist echo chambers.[119] Diversity, equity and inclusion "tends to bring an openness to new ideas and places an emphasis on listening, which is central to creating an organizational culture in which personnel feel empowered to share ideas for improving security operations."[120] Specific improvements will especially be seen in retention rates of historically marginalized groups. Framing DEI principles as a security asset also legitimizes these ideas as values that have long-term benefits to a nuclear organization's performance, reputation, and leadership relating to nuclear security. Integrating DEI into the nuclear security workplace can also help mitigate bias to prevent elements like race, gender, or sexuality from being used as the deciding factor when identifying potential threats or risks.[121] This can refocus the nuclear security regime on behaviors rather than falling back on confirmation biases rooted in assumptions about demographic characteristics.[122]

Diversity, equity, and inclusion are, in fact, essential pieces in harnessing the potential of a nuclear workforce.[123] IAEA security culture guidance notes that "the quality of a decision is improved when the individuals involved are able to contribute their insights and ideas."[124] Furthermore, "an equitable work environment in which personnel feel included is also likely to breed higher employee satisfaction, which in turn, improves performance."[125] One expert noted in an interview that "[a lack of diversity in the nuclear field] absolutely impacts the effectiveness of our work," emphasizing that increasing representation and understanding what current threats look like will mitigate the nuclear security vulnerabilities that a lack of DEI produces.[126] Another participant noted that, "in my experience, [when] you get into that security space, and you start to talk about implicit bias and all the things driving more diversity, equity, inclusion and accessibility, it wasn't part of the conversation. It just wasn't. So, I think it could be a place to help, and it would also address potential bias and how we're viewing threat…And I sense that the DEI lens doesn't come into those conversations right now."[127] An organization responsible for nuclear security that prioritizes all three of these concepts is one that not only recruits and hires employees with different life experiences and ways of thinking, but also provides them all a fair chance to succeed, and creates opportunities for personnel to improve nuclear security operations.

"Diversity can help address homogeneity in the workforce composition, equity can curb unfair treatment by reducing the impact of existing societal inequities on opportunities for advancement and growth for nuclear security practitioners, and inclusion can foster an open-minded nuclear security culture and expand a facility's shared understanding of potential nuclear security threats."[128]

Collectively, these principles of diversity, equity, and inclusion, when considered central to security goals at a nuclear facility, can improve nuclear security implementation and even prevent disgruntled employees from becoming insider threats.[129] Increasing and accelerating DVE activity, specifically targeting critical infrastructure like nuclear power and active duty military personnel, presents challenges and blind spots that existing policies and regulations have overlooked and will continue to do so. And DEI efforts and success in organizations with nuclear security missions have been and will continue to be limited because of structural bias in recruiting, retention, promotion, and healthy organizational cultures. While these sound like two totally different problem sets, a DEI nuclear security culture can address both simultaneously.



Security guard at nuclear plant. U.S. Nuclear Regulatory Commission photo.

6. Key Challenges for the United States

Every country has a unique social, political, and economic context that creates unique challenges for security and DEI work and it is important to note a number of challenges specific to the United States in mitigating bias in the nuclear security regime and to take these challenges into consideration when making recommendations for developing a DEI nuclear security culture in the United States.

Growth of Industry

One of these challenges is uncertainty over the outlook for growth in coming decades in the U.S. civil nuclear energy industry. After rapid growth in the 1950s and 1960s, the industry stagnated after the Three Mile Island incident in 1977 and has added little new generation capacity in the past three decades even as units continue to be retired.[130] At the time of writing, Southern Nuclear Company had brought one new nuclear unit into commercial operation, with another due to do so by the end of 2023, and climate change, advanced reactor technology, and federal and state zero-emission energy incentives have converged to generate renewed interest in and discussion about nuclear power as part of a climate-neutral energy future.[131] For now, however, cost remains a significant obstacle to new construction of both traditional and advanced reactors.[132] And the IAEA's outlook for Northern America, while not specific to the United States, includes a zero-growth scenario as well as a growth scenario.[133] Although one industry interviewee predicted both nuclear power sector growth in the United States and increasing diversity as a direct result of that growth, there are reasons to be cautious about assuming that growth in any given sector of the U.S. economy will automatically result in a more diverse workforce.[134] Historic forces have to date hindered that from happening in numerous sectors. As another interviewee said, "...it has to be very deliberate to improve the DEI posture of these nuclear power plants with our workforce. You cannot assume that it'll happen by osmosis," noting their own company's intentional recruitment at historically Black colleges and universities.[135] The success of any effort to diversify the nuclear security workforce will likely depend on intentional and intensive advance planning, starting now, including for longer-term equity and inclusiveness of that diverse workforce.

Demographic Patterns

Demographic patterns across the United States (in some cases the enduring legacies of discrimination itself) are one example of the challenges to be overcome in building diverse, equitable, and inclusive security workforces for government and private sector nuclear installations scattered around the country. For example, Census Bureau 2022 population estimates indicate an 85 percent White population around Idaho National Laboratory,[136] which reported 86.56 percent of its workforce as White and just 13 percent

as people of color as of October 1, 2022.[137] While Los Alamos National Laboratory at first glance has a significantly more racially diverse workforce, at just 50.9 percent White, the racial breakdown of the remaining 49.1 percent reveals the impact of the laboratory's location in a state whose Hispanic or Latino population ticked over 50 percent in the Census Bureau's July 2022 estimates.[138] The lab reports 38.5 percent of its workforce as Hispanic or Latino, but only 5.4 percent as Asian, 2.1 percent as American Indian, Alaskan Native, Native Hawaiian, or other Pacific Islander, and just 1.5 percent as Black or African American.[139] One interviewee described running into political headwinds when working on DEI issues and trying to partner with a majority White community to try to bring more diversity. Another interviewee suggested that more "out of the box" thinking was required by nuclear facilities located in such homogenous communities to intentionally compensate for geography-dependent demographics. In light of the harassment incident, for example, a related challenge to overcome would likely be reluctance of candidates from underrepresented groups to commit to long-term relocation to such a homogeneous community, given potential risks to their physical and emotional well-being. Remote work options, found to be effective during the COVID pandemic, might allow candidates from diverse backgrounds and other regions of the country to join the workforce without physically relocating. A second option might be to agree in advance on a limited time period of commitment to a position that requires physical, in-person presence. [140]

Priming the Pipeline

A similarly substantive issue is that of "priming the pipeline" for more diverse recruitment to the nuclear security sector. The Tennessee Valley Authority (TVA), for example, frames the issue succinctly in its FY 2022 DEIA report: "TVA and its union partners face a unique labor challenge. TVA's success in attracting additional industry and bringing economic growth to the region is increasing its need for skilled labor. At the same time, the country is facing a long-term skilled labor shortage."[141] While outreach and recruitment at historically Black colleges and universities and other minority-serving institutions is prominently featured on the DEI web pages of many nuclear organizations, both in government and the private sector, "People are fighting over female Black Engineers… there [are] still not enough female Black engineers," as one interviewee put it.[142] And structural barriers to participation persist even after hiring and affect retention and promotion.

Data Collection and Transparency

Data collection and transparency will also be an issue in measuring progress and holding organizations accountable. "Many Federal datasets are not disaggregated by race, ethnicity, gender, disability, income, veteran status, or other key demographic variables," the Biden administration acknowledged in the January 21, 2021, Executive Order 13985, *Advancing Racial Equity and Support for Underserved Communities Through the Federal Government*. "This lack of data has cascading effects and impedes efforts to measure and advance equity." Where such datasets exist, moreover, they may not be made public. The Biden administration's Executive Order 14035 on *Diversity, Equity, Inclusion, and Accessibility in the Federal Workforce* resulted in the first annual government-wide DEIA report in 2022 to include workforce demographics.[143]

While the new federal workforce data collection and reporting mandate is a helpful step, the impact of which will become clearer over time, for now, piecing together a demographic picture of the U.S.

government nuclear security workforce is complicated by the range and number of department and agency stakeholders and the varying data formats and publication methods used by each. For example, the most recent publicly available DOE National Nuclear Security Administration (NNSA) workforce demographic report is dated January 3, 2021.[144] DOE's National Laboratories, however, many of which have nuclear or nuclear security missions, all have a DEI page with links to workforce demographic data as of 2022, some in table format, some in infographic format, and several include multi-year trend data.[145] The U.S. Navy and Air Force, the two service branches directly responsible for the majority of nuclear facilities, security, and operations, also differ in the demographic data they make available and the presentation of that data. The Navy links to multi-year infographics for active-duty members from a central DEI page.[146] By contrast, USAF provides links to separate bulleted fact sheets of one-year demographic data, current as of March 31 and June 30, 2023, respectively, for active duty and civilian members.[147]

On the private sector side, U.S. law does require all employers with 100 or more employees, and federal contractors with 50 or more employees meeting certain criteria, to submit demographic workforce data, including data by race, ethnicity, sex, and job categories, in an annual "EEO-1" report to the EEOC.[148] However, the reports are not made public, despite the case for showcasing good corporate governance and progress on key diversity issues.[149] DOE's annual *United States Energy and Employment Report* publishes aggregate nuclear energy industry data, but the availability of more detailed workforce demographic data from individual civil nuclear power companies and plants varies.[150] Data gathering is further complicated by the industry's complex structure of plants, owners, operating companies, and holding companies, and the availability of data varies even in a comparison across just one layer of this structure. For example, a comparison of the DEI web pages of eight nuclear power holding companies showed that only five published workforce demographics, for different years, and only three made trend data available.[151] Going forward, the private sector could benefit greatly from WINS' robust work in developing an organizational DEI self-assessment and evaluation tool[152] as well as a standard framework for reporting on DEI efforts.[153] While nominally focused on gender assessment and reporting, the tools emphasize the importance of an intersectional approach and offer a critical starting point and template for nuclear security organizations to report on DEI efforts more broadly.

Constitutional Protections on Free Speech

Constitutional protections on free speech, while fundamental and cherished pillars of U.S. democracy, may also complicate the quest for a DEI nuclear security culture, especially in the government sector. The First and Fourth Amendments to the Constitution together guarantee U.S. citizens freedom of religion, expression, and assembly, the right to petition the government, and protection from arbitrary arrest, surveillance, and invasion of privacy. As a DEI nuclear security culture potentially helps broaden the focus of who and what constitutes a threat, to include not just the foreign-origin risks of past decades but also domestic threats, U.S. citizens may increasingly be the focus of scrutiny, with private behavior and communications more relevant than ever to determining the seriousness and imminence of a threat.

How to balance citizens' constitutional rights and the government's interest in monitoring for threats is a perennial question despite catch-all clauses covering anarchic activity and attempts to overthrow the U.S. government. Industry workshop participants described company monitoring of employees' social media presence and clear company policies about acceptable online behavior, with employees expected to represent their workplace at all times. However, a senior government leader described federal and

military policies as "very gray," and voiced doubt about their enforceability as well as supervisors' ability to hold federal employees or military members accountable for problematic social media posts.[154] Confusion over how authorities should differentiate between legitimate free speech and speech inciting violence, for example, contributed to the law enforcement gaps leading up to the events of January 6, 2021. With DVE an acknowledged growing threat and social media a major forum for problematic speech and information sharing, the balance between privacy, civil liberties, and government interest in countering domestic threats is again at issue, and bears re-examining and careful calibration.

Political Polarization over DEI

U.S. political polarization over DEI issues is likely to pose a significant barrier in itself to creating a DEI nuclear security culture for the foreseeable future. Executive Order 13950 issued by President Donald Trump in September 2020 ordered U.S. government to combat race and sex stereotyping, for example, with reportedly broad chilling effect on DEI training and other initiatives. "I was never told to stop until we got to that critical race theory piece, which was that October/November, just right around the election," one interviewee said, describing being told to cease DEI training efforts. "I was operating, pushing all these initiatives and getting no pushback … up until that."[155] While President Joe Biden has reversed that order and issued several new ones seeking to strengthen DEI initiatives in both the government and society more broadly, congressional divisions over DEI issues linger and increasingly impact the efforts by the U.S. military's efforts to address concerns.[156] In addition, those same divisions set up a bitter fight over the annual DoD spending legislation, characterized as posing the first realistic threat in decades to timely passage of the military budget appropriation.[157] Yet some study participants identified the importance of how DEI initiatives are framed for how they are received. "DEI is about broadening your talent pool and retaining the talent you already have. In a low manning environment, that's a great message that resonates," one survey respondent wrote, also recommending "opening up the concept of what DEI is to address nuclear security specific areas of discrimination (vet[eran] vs. not vet[eran], etc.)."

7. Recommendations for a DEI Security Culture in the United States

Positing that bias not only contributes to DEI challenges but weakens nuclear security, and that bias mitigation leads to better organizational and nuclear security outcomes, it is important to draw on the existing body of research to understand how nuclear facilities could integrate ongoing DEI efforts holistically into the fabric of organizational and nuclear security culture itself for a "DEI nuclear security culture."[158] The IAEA's Nuclear Security Series No. 7 (NSS 7) *Nuclear Security Culture* implementing guide and the WINS' *Nuclear Security Culture International Best Practice Guide* together provide the theoretical and practical foundation for nuclear security culture development. WINS' *Advancing Gender Equality, Diversity and Inclusion in Nuclear Security Self-Assessment, Evaluation, and Action Plan Tool* provides additional insights for integrating DEI into nuclear security culture.

Edgar Schein's organizational culture model informs all these frameworks, identifying three key elements of organizational culture: artifacts, values, and assumptions.[159]

> ***Artifacts*** are visible surface manifestations of organizational culture — the most tangible or evident elements alluding to an organization's culture, such as furniture and office design/layout, dress codes, inside jokes, stories, and mantras.[160]
>
> ***Values*** are "espoused justifications" or the "goals, strategies, philosophy, and norms central to the organization."[161] Values set the tone for how members of the organization interact with and represent the organization and are often reinforced in public declarations, such as institutional core values.[162]
>
> ***Assumptions*** serve as the bedrock of organizational culture.[163] Organizational culture encapsulates the beliefs and behaviors driving power and leadership within an organization, and assumptions are so deeply embedded at an institution that they can sometimes go unnoticed, while serving as the foundation that values and artifacts build on.[164]

These resources reveal parallels between the DEI efforts in corporate organizational culture and nuclear security goals in nuclear facility culture that can be leveraged to mutually support both DEI and nuclear security endeavors. A DEI organizational culture model argues that diversity, equity, and inclusion principles should be part of the basic assumptions of an institution. These assumptions in turn inform the values and artifacts of an organization, making the institution more diverse, equitable, and inclusive

over time.[165] This same principle applies to nuclear security culture. The importance of nuclear security and of every stakeholder at every level playing a role in the physical protection of nuclear material should be "baked" into the assumptions, values, and artifacts of a nuclear facility.[166] The literature thus suggests that the importance of DEI for nuclear security implementation should likewise be "baked" into the basic assumptions of a facility's nuclear security culture as the most sustainable and effective way to develop a DEI nuclear security culture.

KEY UNDERSTANDINGS FOR A DIVERSE, EQUITABLE, AND INCLUSIVE NUCLEAR SECURITY CULTURE[167]

To develop a DEI nuclear security culture, the principles of diversity, equity, and inclusion must be considered crucial for strengthening nuclear security implementation.[168] This idea must be mainstreamed into the basic assumptions of a facility's nuclear security culture.

To develop this understanding within the organizational culture, several key assumptions need to be shared across an organization:[169]

- Developing an organizational culture that champions DEI principles is an important asset to successfully developing a DEI nuclear security culture.
- Structural biases that unfairly exclude or isolate certain demographics must be recognized as an inherent weakness for nuclear security implementation.
- Integrating DEI principles into nuclear security culture requires buy-in from a diverse range of stakeholders, including the state, organizations, managers, personnel, the public, and the international community.

These assumptions must also align with the related values and the artifacts of a nuclear facility. "If nuclear security culture is 'the assembly of characteristics, attitudes and behaviors of individuals, organizations, and institutions which serves as a means to support and enhance nuclear security,' then nuclear security stakeholders need to understand how [DEI] shared values strengthen the characteristics, beliefs, and attitudes of individuals, organizations, and institutions that underpin nuclear security by acknowledging and mitigating the effects of structural biases."[170]

Furthermore, each U.S. nuclear security stakeholder must integrate DEI considerations into their part of the national nuclear security culture. This paper draws on the IAEA's guide to nuclear security culture to map the stakeholders and specify the roles and responsibilities of each in creating a strong DEI nuclear security culture, starting with the State, or government, through organizations, then management, personnel, and the public. Due to the U.S. focus of the research, the state organs and related nuclear security organizations and stakeholders that are listed below all pertain to the United States.

State/Federal

First among the State's responsibilities is setting the legal and regulatory framework for nuclear security, where an emphasis on the role of DEI in strengthening nuclear security can provide the foundation for the culture in nuclear organizations throughout the country.[171] In addition, the State is responsible for an overall security policy based on an evaluation of the threat, requirements for determining personnel trustworthiness, and distribution and coordination of responsibilities.

In evaluating the threat, it is critical that the organizations at the heart of intelligence collection and analysis themselves have a commitment to diversity, equity, and inclusion. In the field of national (and by extension nuclear) security, the importance of taking into account long discounted and ignored definitions and conditions of security has been noted by senior experts in the field.[172] While one study participant ranked other challenges as more significant than diversity in ensuring high-quality intelligence inputs to the Nuclear Security Threat Capability Assessment,[173] a foundational and regularly updated assessment of nuclear security threats, diversity has been found to be critical to achieving better decision making and outcomes on teams, and intelligence collection and analysis should prove no exception.[174]

The State is also responsible for establishing requirements for determining personnel trustworthiness.[175] Here it is also vital that diversity, equity and inclusion principles be intentionally considered and included, given the disproportionate effect structural bias may have on marginalized groups (as argued in Section 4 of this paper).

The State can also incorporate DEI when considering distribution and coordination of nuclear security responsibilities. For example, the State should include explicit responsibilities for ensuring diversity, equity, and inclusion for each entity in the nuclear security architecture in defining the broader scope of responsibilities, as reflected in multiple U.S. executive orders and memoranda over the years. Related to this expectation, the State has a role to play in setting the foundational assumptions for the entire nuclear security enterprise.

RECOMMENDATIONS FOR THE U.S. GOVERNMENT:

White House/Interagency

- ***Develop domestic guidance.*** The United States should develop guidance on implementing diversity, equity, and inclusion within its national nuclear security regime and mainstreaming DEI into nuclear security culture across different domestic stakeholders. To complement this approach, questions about DEI should be integrated into standard organizational security culture survey language, exit interviews, and performance assessments at U.S. government organizations that deal with nuclear security.[176]

- ***Develop consistent definitions.*** Common definitions of terms like "DEI," "extremism," and "active participation" are needed to ensure that there is consistent interpretation across different government agencies and that misbehavior related to these terms is equitably addressed through reporting and discipline processes.

- ***Mandate DEI trainings.*** U.S. federal policy should mandate regular DEI trainings for the federal nuclear security workforce to ensure that core DEI values are consistent across organizations and considered

integral to security implementation. These trainings should also be regularly reviewed and subject to feedback to ensure that all participants are engaged and knowledgeable about the security vulnerabilities created by a homogenous, exclusive, and unfair workplace.

- ***Mandate collection and publication of workforce demographic data.*** Comprehensive and reliable public data on demographic traits for nuclear security practitioners beyond gender or geographic representation, such as race or sexuality, is virtually nonexistent. Obtaining this data is essential for monitoring progress, determining whether initiatives are working, and gauging how demographic changes among nuclear security field practitioners yield positive results.[177]

- ***Strengthen public statements.*** The White House should develop language around workforce composition, fairness, and participation for nuclear security both ahead of and during international and other relevant engagements. U.S. ambassadors and representatives should advance DEI language and its relevance to nuclear security culture in national or other high-level statements. These statements should also endorse clear and measurable targets for the United States to diversify its nuclear security workforce and commitments to reporting on the data.[178]

- ***Support developing international guidance.*** The United States should encourage the IAEA to develop guidance on implementing diversity, equity, and inclusion within member states' nuclear security regimes and to mainstream DEI within relevant existing guidance, like the Nuclear Security Series. This international guidance can then reinforce U.S. domestic norms.[179]

- ***Review the security clearance process:*** With support from the White House, the Director of National Intelligence should issue Security Executive Agent Directives to authorize reforms to create greater legal barriers to entry for DVEs into sensitive nuclear security roles across government agencies and contractors, require reporting of demographic information about candidates who apply for a security clearance to identify whether certain groups are disproportionately denied a clearance, and investigate whether biased assumptions of risk or actual misbehavior is informing the rejections.[180]

- ***Audit continuous vetting programs for bias.*** Examine how the design and agency implementation of the federal Trusted Workforce 2.0 personnel vetting program may allow for bias in threat or risk identification criteria and inequitable processes for personnel surety or reliability investigations.

- ***Champion DEI programs.*** The United States needs to continue supporting the hiring, retention, and advancement of diverse candidates for domestic nuclear security roles. Domestic programs like the NNSA Graduate Fellowship, as well as international initiatives like the IAEA's Marie Skłodowska-Curie Fellowship and the Lise Meitner Program for early-mid career professionals are important efforts underway, but further work with a more intersectional understanding of diversity — beyond the lens of gender — is needed, both in addition to and through these initiatives.[181] To complement this approach, questions about DEI should be integrated into standard organizational culture survey language, exit interviews, and performance assessments at U.S. government organizations that deal with nuclear security.[182]

Congress

- ***Require review of the security clearance process:*** Bipartisan legislation directing review and reform of security clearance policy and procedure is needed to pressure executive branch stakeholders to implement

necessary changes. Congress should seek reforms to create greater legal barriers to entry for DVEs into sensitive nuclear security roles and require reporting of demographic information about candidates who apply for a security clearance to identify whether certain groups are disproportionately denied a clearance, and investigate whether biased assumptions of risk or actual misbehavior is informing the rejections.[183]

- ***Enshrine Executive Orders into law.*** Executive Orders on DEI and extremist threats should be codified in law to ensure consistent application independent of political control of the White House, and ensure that executive agencies continue to collect data, be transparent, and provide reports, in compliance with the law.

Organizations

Organizations with nuclear security responsibilities should focus on mainstreaming DEI into organizational culture and incorporating DEI into programs to strengthen nuclear security culture. Organizational nuclear security policy statements should include commitment to DEI and restate the assumptions that structural biases are vulnerabilities for nuclear security and that DEI values are critical to strengthening nuclear security. Management structures should include not just an individual responsible for nuclear security but an individual responsible for overall DEI oversight, ensuring that the two positions are linked by communication and decision-making structures. Ensuring a diverse security workforce, equitable and inclusive security policies, and equitable and inclusive application of those policies and procedures should be made key responsibilities of the nuclear security position. The organization should integrate DEI considerations into all management systems overseeing the organization's security functions — for example, ensuring that compliance with organizational DEI goals is part of security compliance assessment and that improvement of DEI indicators is part of security performance improvement.

The U.S. nuclear sector has a diverse range of nuclear security organizations acting as stakeholders working together on the physical protection of nuclear weapons, material, facilities, technology, and information. Per the IAEA, "there may be several organizations within the State that have both responsibility for and interest in a nuclear security culture, e.g. the nuclear regulatory body, operating organizations of nuclear facilities, law enforcement authorities, the military, health ministries, intelligence organizations, emergency response authorities and public information officials."[184] These diverse stakeholders also operate in unique contexts, and just as industry facilities, government agencies, and regulators each requires a unique approach to address their specific nuclear security challenges, each also requires tailored recommendations to implement a DEI nuclear security culture.

RECOMMENDATIONS FOR U.S. GOVERNMENT DEPARTMENTS AND AGENCIES WITH NUCLEAR SECURITY RESPONSIBILITIES:

DOD/Office of the Assistant Secretary of Defense for Nuclear, Chemical, and Biological Defense Programs/Nuclear Matters/Office of the Under Secretary of Defense for Personnel & Readiness/US Air Force/US Navy

- ***Mainstream DEI into nuclear security culture.*** DOD's Office of the Assistant Secretary of Defense for Nuclear, Chemical, and Biological Defense Programs/Nuclear Matters should prioritize the goal of helping practitioners in military, civilian, and contractor roles develop more comprehensive approaches

to evaluating threats and incorporating DEI as core values fundamental to nuclear security culture at nuclear weapons facilities.[185] To do this, DOD as a whole needs to also ensure that it is fulfilling its commitment to eliminating barriers to diversity and EEO by assessing the DEI challenges in place for military, civilian, and other DOD components.[186] This also entails modernizing security and organizational culture to address evolving threats, such as by using social media activity in personnel surety assessments. Additionally, DOD intelligence inputs to the Nuclear Security Threat Capability Assessment should consider a diverse range of perspectives to ensure a comprehensive understanding of threats posed to the nuclear enterprise that includes both foreign threats and DVEs.

- ***Collect data.*** Organizations and facilities must commit to regularly collecting and sharing data as crucial for monitoring progress and determining whether initiatives are working. DOD organizational culture surveys, exit interviews, and performance assessments for facilities and personnel responsible for nuclear security should provide the option for participants to share demographic data, to help organizations identify whether particular groups are being excluded or treated unfairly in the workplace, confirm whether insider threat behaviors are being taken seriously, and seek to identify issue areas for nuclear security implementation relating to DEI challenges.[187] Demographic statistics for DOD across military, civilians, contractors, and other areas of the nuclear community should be provided for workers in addition to leadership, and should specify roles and responsibilities to determine whether there are barriers to entry for certain groups in particular roles.

- ***Report consistently.*** Regular organizational reporting on nuclear security workforce demographics and organizational culture is necessary to ensure transparency and accountability, determine the effectiveness of DEI initiatives in changing nuclear security workforce composition and culture over time, and gauge the impact of that change on organizational and security culture at DOD-operated nuclear facilities.[188] DOD's Office of the Under Secretary of Defense for Personnel & Readiness should report demographic data in the context of roles and responsibility of all staff, including leadership, in line with DOD and federal priorities to identify and eliminate potential barriers to diversity and EEO in the military departments and other DOD components.

- ***Promote transparency and information sharing.*** U.S. government nuclear security organizations should consistently share ongoing DEI initiatives and outcomes for workforce composition and nuclear security, as well as lessons learned, to encourage evolving policy and accountability. DOD's Office of the Under Secretary of Defense for Personnel & Readiness should adopt the recommendations identified by the GAO in their *DOD Civilian Workforce: Actions Needed to Analyze and Eliminate Barriers to Diversity* report to share barriers to workforce diversity for civilians and military personnel, efforts to eliminate these barriers, their effectiveness, and the tracking measures in place.[189]

- ***Develop consistent definitions.*** Common definitions of terms like "DEI," "extremism," and "active participation" are needed in DOD policy and guidance in line with broader federal definitions to ensure that there is consistent interpretation across the organization.

- ***Revisit intelligence criteria for insider threat risk.*** To ensure that DOD personnel surety program indicators for identifying insider threats are consistent across the organization, personnel surety program guidance should contain metrics to consider risk from a variety of perspectives, and include misbehaviors such as sexual harassment, racialized abuse, homophobic harassment, and religious ostracization as potential insider threat indicators.

- ***Apply a DEI lens to research funding.*** DOD should prioritize efforts to fund and promote work that explores DEI and nuclear security intersections with domestic and international partners to promote comprehensive nuclear security implementation. Principal investigators and contractors from historically disadvantaged groups should be given fair chances to be funded as knowledge producers for the nuclear security field.

- ***Consider how security procedures can "other" staff.*** Security processes can have gendered outcomes or disproportionately affect historically disadvantaged groups.[190] DOD must consider how personnel surety programs and physical security measures can make staff feel excluded and work to adjust continuous evaluation procedures to make staff more comfortable, without compromising security, as a crucial component to developing a DEI security culture at a facility.

DOE/NNSA/Office of Counterintelligence/Office of Security/National Labs

- ***Mainstream DEI into nuclear security culture.*** DOE's National Nuclear Security Administration should prioritize the goal of helping practitioners in national labs, in transportation security, and on interagency details develop more comprehensive approaches to evaluating threats and incorporate DEI as core values fundamental to nuclear security culture at DOE facilities.[191] To do this, DOE also needs to ensure that it is fulfilling its commitment to eliminating barriers to diversity and EEO by integrating DEI values across its broader organizational culture, including NNSA. DOE's insider threat program and NNSA's human reliability program should consider a diverse range of perspectives to ensure a comprehensive understanding of threats posed to DOE's nuclear facilities, materials, and personnel that includes both foreign threats and DVEs. When developing programs to support a DEI security culture, initiatives like affinity groups or employee resource groups should be included to identify and acknowledge cultural differences that may be driving exclusionary misbehaviors within nuclear facility workplaces.[192]

- ***Collect data.*** DOE/NNSA organizational culture surveys, exit interviews, and performance assessments for national labs, NNSA headquarters, and other DOE facilities, offices, and personnel involved in nuclear security should provide the option for participants to share demographic data, to help organizations identify whether particular groups are being excluded or treated unfairly in the workplace, confirm whether insider threat behaviors are being taken seriously, and seek to identify issue areas for nuclear security implementation relating to DEI challenges.[193] Demographic statistics for DOE personnel more broadly and NNSA specifically (including contractors) should be provided for regular employees in addition to leadership, and should specify roles and responsibilities to determine whether there are barriers to entry for certain historically disadvantaged groups in particular roles.

- ***Report consistently.*** DOE broadly and NNSA specifically should report more thoroughly on demographic data in the context of roles and responsibility of all staff, to indicate potential barriers to entry, advancement, and EEO in nuclear security roles both aggregately and at the facility level. DOE should adopt the recommendation in the GAO report *Nuclear Security: DOE Should Take Actions to Fully Implement Insider Threat Program*, to resume annual reporting for its insider threat program and include the actions the program has taken to address external findings and recommendations it receives.[194] These should also include updates on bias mitigation efforts and threat demographics to identify whether broader national security concerns are reflected in the threats posed to nuclear security.

- ***Promote transparency and information sharing.*** DOE needs to promote consistent integration of insider threat program responsibilities across the Security Office, the Office of Counterintelligence, NNSA, and national labs to address insider threats of both foreign and domestic origin.

- ***Develop consistent definitions.*** Common definitions of terms like "DEI," "extremism," and "active participation" are needed in DOE/NNSA policy and guidance in line with broader federal definitions to ensure that there is consistent interpretation across the department, agency, labs, and other facilities.

- ***Revisit intelligence criteria for insider threat risk.*** Ensure that DOE/NNSA's human reliability program indicators for identifying insider threats are consistent across the organization, Insider threat program guidance should contain metrics to consider risk from a variety of perspectives, and include misbehaviors such as sexual harassment, racialized abuse, homophobic harassment, and religious othering as potential insider threat indicators. DOE should adopt the recommendations in the GAO report *Nuclear Security: DOE Should Take Actions to Fully Implement Insider Threat Program*, specifically those that emphasize the need to take a single, department-wide approach to managing insider risk and ensure that contractor requirements include responsibilities such as insider threat response actions and are consistently implemented across DOE sites, in coordination with NNSA and DOE program offices.[195]

- ***Implement changes to the security clearance process.*** DOE's Office of Personnel and Facility Clearances and Classification should thoroughly implement directed reforms to the security clearance process when reviewing and reaching a decision to grant a DOE/NNSA security clearance based on the results of externally conducted background investigations. DOE processes are typically in line with national security intelligence clearance processes and should therefore align to reduce bias in the investigative process across government agencies and contractors.[196]

- ***Apply a DEI lens to research funding.*** DOE, NNSA, and the national labs should continue efforts to fund and promote work that explores DEI and nuclear security intersections with domestic and international partners, such as the NNSA Nuclear Security Women Initiative. Principal investigators and subcontractors from historically disadvantaged groups should be given fair chances to be funded as knowledge producers for the nuclear security field.

- ***Consider how security procedures can "other" staff.*** DOE/NNSA must consider how human reliability programs and physical security measures can make staff feel excluded and work to adjust continuous evaluation procedures to make staff more comfortable, without compromising security, as a crucial component to developing a DEI security culture at a facility.

- ***Audit personnel surety programs for bias.*** Examine how DOE/NNSA implementation of the Trusted Workforce 2.0 program may allow for bias in insider threat identification criteria and inequitable processes for human reliability investigations.

OPM

- ***Collect data:*** Demographic statistics for federal employees should specify roles and responsibilities to determine whether there are barriers to entry for certain historically disadvantaged groups in particular nuclear security roles.

- ***Report consistently:*** OPM should report more frequently on demographic data in the context of roles and responsibility of all staff, to indicate potential barriers to entry, advancement, and EEO in nuclear security roles.

Intelligence and Security Organizations (FBI, ODNI, DCSA, OPFCC)

- ***Collect data.*** Organizational culture surveys, exit interviews, and performance assessments should provide the option for participants to share demographic data. Organizations involved in the personnel security clearance process, including the Defense Counterintelligence and Security Agency, the Office of the Director of National Intelligence, and the Office of Personnel and Facility Clearances and Classification, should also collect demographic data on candidates who apply for, are granted, and are denied security clearances, to help identify whether certain historically disadvantaged groups are disproportionately denied a clearance, and investigate whether biased assumptions of risk or actual misbehavior is informing the rejections.

- ***Report consistently.*** Intelligence and security organizations should report more thoroughly on demographic data in the context of roles and responsibility of all staff, to indicate potential barriers to entry, advancement, and EEO. Consistent reporting on demographic discrepancies between security clearances requested and clearances granted for the nuclear security workforce is also necessary to ensure transparency and accountability, determine the effectiveness of DEI initiatives in changing nuclear security workforce demographics over time, and identify the degree to which the security clearance process is posing as a barrier to entry.

- ***Promote transparency and information sharing.*** U.S. government intelligence organizations should consistently share ongoing DEI initiatives and outcomes, as well as lessons learned, to encourage evolving policy and accountability in the security clearance process. Organizations should also ensure that DVE threats are being consistently identified across intelligence organizations.

- ***Develop consistent definitions.*** Common definitions of terms like "DEI," "extremism," and "active participation" are needed to ensure that there is consistent interpretation across different intelligence and nuclear security agencies.

- ***Revisit intelligence criteria for insider threat risk.*** Ensure that indicators for identifying insider threats are consistent across an organization, consider risk from a variety of perspectives, and include misbehaviors such as sexual harassment, racialized abuse, and religious discrimination as potential insider threat signs.

- ***Implement changes to the security clearance process***: The Defense Counterintelligence and Security Agency, Office of the Director of National Intelligence, FBI, and other relevant intelligence and security agencies should thoroughly implement Security Executive Agent Directives that reform the security clearance process to reduce bias in the investigative process across government agencies and contractors.[197]

It is important to acknowledge that there are a broad range of nuclear security organizations that were not included in this research due to the limitations of time and scope of the project in examining domestic U.S. security culture implementation. Further investigation into the role of organizations like the State Department, Department of Homeland Security, and other nuclear security organizations (government or otherwise) is an important follow-on to this work.

RECOMMENDATIONS FOR INDEPENDENT U.S. GOVERNMENT ORGANIZATIONS:

U.S. Nuclear Regulatory Commission (NRC)

- ***Develop guidance for industry DEI nuclear security culture.*** The NRC should develop guidance on implementing diversity, equity, and inclusion with the domestic nuclear industry (NRC licensees) and mainstream DEI into nuclear security culture. These measures can include programs like affinity groups or employee resource groups to identify and acknowledge cultural differences that may be driving exclusionary misbehaviors within nuclear facility workplaces.[198]

- ***Mandate DEI in nuclear security culture.*** The NRC should explore mainstreaming DEI into nuclear security culture as a regulatory obligation integrated between human resources and nuclear security personnel to help practitioners develop more comprehensive approaches to evaluating threats.[199]

- ***Require workforce demographic data collection.*** The NRC should require all nuclear facilities to commit to regularly collecting and sharing data as crucial for monitoring progress and determining whether initiatives are working. This would also mandate that organizational culture surveys, exit interviews, and performance assessments at organizations that deal with nuclear security offer staff the option to provide demographic data, to help organizations identify whether particular groups are being excluded or treated unfairly in the workplace.[200]

- ***Mandate workforce demographic data reporting.*** The NRC should mandate and develop guidance to ensure consistent reporting on nuclear security workforce demographics to ensure transparency and drive accountability.

- ***Integrate DVE into threat assessments.*** As part of establishing and maintaining DBTs, the NRC should ensure that DVE threats are included as part of the threats reviewed by the Annual Threat Environment Review. The NRC Information Assessment Team should receive regular training to ensure that their understanding of threat is broader than their own lived experience to ensure that a comprehensive range of threats to nuclear facilities are assessed during their review and considered during interagency working group meetings.

- ***Publish security incident data.*** The NRC should also be more transparent in sharing with the public the aggregate data about nuclear security and personnel incidents from the nuclear plant operators' reports on performance indicators that are submitted quarterly to help gauge how demographic changes in the nuclear security field yield positive operational results. Specifically, some of the security performance indicators that are not publicly available should be shared.[201]

- ***Balance priorities***. Industry stakeholders face different demands relating to organizational reputation and stockholder accountability when it comes to transparency about nuclear security. The NRC has to find different ways to incentivize industry to be more transparent about DEI and nuclear security incidents to demonstrate how these organizations are dealing with DEI and security challenges.

U.S. Government Accountability Office (GAO)

- ***Investigate intersections between nuclear security and DEI.*** GAO reports serve as mechanisms of accountability and transparency into government processes and procedures around typically secretive

federal processes. Recommendations for reports relating to DEI in nuclear security should include recommendations like affinity groups or employee resource groups to identify and acknowledge cultural differences that may be driving exclusionary misbehaviors within nuclear facilities.[202] GAO monitoring of DEI nuclear security culture effectiveness and implementation is a means of tracking progress and driving change.

GAO REPORTS OF RELEVANCE TO THIS TOPIC AREA INCLUDE:

Domestic Terrorism: Further Actions Needed to Strengthen FBI and DHS Collaboration to Counter Threats (*February 2023*)
https://www.gao.gov/products/gao-23-104720

Violent Extremism and Terrorism: Agencies Can Take Additional Steps to Counter Domestic Threats (June 2023)
https://www.gao.gov/products/gao-23-106758?utm_campaign=usgao_email&utm_content=topic_homelandsecurity&utm_medium=email&utm_source=govdelivery

Nuclear Security: DOE Should Take Actions to Fully Implement Insider Threat Program (May 2023)
https://www.gao.gov/products/gao-23-106758

DOD Civilian Workforce: Actions Needed to Analyze and Eliminate Barriers to Diversity (June 2023)
https://www.gao.gov/products/gao-23-105284

Sexual Harassment: NNSA Could Improve Prevention and Response Efforts in Its Nuclear Security Forces (April 2021)
https://www.gao.gov/products/gao-21-307

RECOMMENDATIONS FOR U.S. NUCLEAR INDUSTRY (NRC LICENSEES):

- ***Demonstrate leadership in DEI for nuclear security.*** Industry stakeholders, influential and relatively resource-rich, need to be transparent about DEI measures that work and pioneer innovative approaches to bring underrepresented groups into the nuclear security workforce.

- ***Mainstream DEI into nuclear security culture.*** All industry partners responsible for implementing nuclear security should have programs focused on strengthening security culture. These programs should incorporate DEI as a core concept fundamental to nuclear security culture to help nuclear security practitioners develop more comprehensive approaches to evaluating threats.[203] Industry practitioners must understand how structural and individual bias may influence nuclear security policy creation and implementation, and how a failure to mitigate bias may create vulnerabilities in a nuclear facility's security.

- ***Collect workforce demographic data.*** Commercial facilities must commit to regularly collecting and sharing data as crucial for monitoring progress, determining whether initiatives are working, and gauging how demographic changes in the nuclear security field yield positive results. Organizational culture surveys, exit interviews, and performance assessments at organizations that deal with nuclear security should have the option to collect demographic data, to help organizations identify whether particular groups are being excluded or treated unfairly in the workplace.[204]

- ***Create sustainable strategies for DEI in hiring.*** Nuclear industry organizations must create intentional and intensive advance planning, starting now, including for longer-term equity and inclusiveness of that diverse workforce in order to meet commitments for creating a diverse, equitable, and inclusive organizational and security culture. This methodological approach must also be reflected in retainment and advancement strategies for historically marginalized groups.

- ***Conduct workforce demographic reporting.*** Consistent industry reporting on nuclear security workforce demographics is necessary to ensure transparency and accountability, determine the effectiveness of DEI initiatives in changing nuclear security demographics over time, and gauge the impact of that change on organizational and security culture at nuclear facilities. Using the WINS *Reporting Framework for Gender Equality, Diversity, and Inclusion*, commercial organizations can develop their "Plan, Prepare, Publish, Promote cycle," which provides the main reporting principles and components.[205]

- ***Avoid tokenism.*** Effective DEI needs to be considerate of the language used to promote inclusion of and equity for underrepresented groups in nuclear security. Candidates who benefit from DEI work should feel that they are being rewarded for their contributions, not singled out for their identity, in order to ensure that they feel included and valued for their contributions to a facility's security culture.

- ***Advocate transparency in risk assessment.*** Ensure that indicators for identifying insider threats are consistent across industry, consider risk from a variety of perspectives, and include misbehaviors such as sexual harassment, racialized abuse, and religious ostracization as potential insider threat signs. Share criteria for assessing risk to illustrate how structural bias and practitioner bias are mitigated to avoid demographic profiling.

- ***Ensure reporting of diverse threats.*** Facilities that report threats to the NRC and other relevant intelligence and law enforcement agencies should ensure that a wide range of threats, including DVE, are included. Security and intelligence personnel at facilities should receive regular training to ensure that their understanding of threat is broader than their own lived experience to ensure that a comprehensive range of threats to nuclear facilities are assessed during their review and reported appropriately.

- ***Balance priorities.*** Industry stakeholders face different demands relating to organizational reputation and stockholder accountability when it comes to transparency about nuclear security. These needs should be balanced with better transparency initiatives about DEI and nuclear security incidents to demonstrate how these organizations are dealing with DEI and security challenges.

MANAGEMENT

Where NSS 7 underscores the importance of managers in ensuring that staff understand the core assumptions underpinning a strong nuclear security culture, this study argues that they should also be

responsible for ensuring understanding among staff of the core DEI assumptions underpinning a strong DEI nuclear security culture. Many study participants emphasized the role that managers and leaders have in a nuclear organization not just in articulating and disseminating policy and expectations for the entire workforce but in demonstrating personal commitment and compliance as an example for all to follow.

For example, managers should be visible participants in voluntary DEI training. They should take the lead in convening listening sessions or conversations to understand individual and group diversity challenges, barriers to inclusion, retention, and promotion. They should also ensure that staff time spent participating in DEI activities is considered and counted as part of their regular core duties. This idea is echoed in IAEA guidance, which specifies that managers "influence culture throughout their organization through their leadership and management practices. With sustained effort, and by employing the incentives and disincentives at their disposal, they must establish patterns of behaviour and even alter the physical environment."[206] Managers are essential not just in developing and enforcing nuclear security policy, but in revising security objectives, and demonstrating personal commitment and adherence as an example for all to follow when it comes to a DEI security culture.

Management is differentiated between senior managers and middle managers, as each group has different responsibilities to the organization and its employees. Senior managers are often responsible for the creation of organizational policies, procedures, governance, and culture for nuclear security, while middle managers are often responsible for implementation of such nuclear security policies, procedures, governance, and culture. [207]

Recommendations for Senior Managers:

- ***Design and implement a DEI nuclear security culture that is integrated into the organizational management system.*** Nuclear security culture programs, in which senior managers should lead practitioners to develop more comprehensive approaches to evaluating threats, should integrate DEI as a core concept fundamental to nuclear security culture. These programs can help nuclear security practitioners develop more comprehensive approaches to evaluating threats, and senior managers can help enforce upholding of the nuclear security culture through creating concrete management and programmatic policies.[208]

- ***Lead and participate in DEI initiatives.*** Senior managers should not only be visible participants in voluntary DEI training, but lead in directing the organization towards adopting DEI policies and initiatives. In order to implement effective policies, they should lead in convening listening sessions or conversations to understand individual and group diversity challenges, barriers to inclusion, retention, and promotion. They should also ensure that middle managers and non-managerial staff are actively participating and engaged in DEI work and seek feedback on whether trainings are effective. They should identify opportunities to advance and promote DEI in the nuclear security workplace.[209]

- ***Revisit intelligence criteria for insider threat risk.*** Ensure that indicators for identifying insider threats consider risk from a variety of perspectives and include misbehaviors such as sexual harassment, racialized abuse, and religious ostracization as potential insider threat signs. These indicators should identify counterproductive workplace behaviors or misbehaviors in personnel that may be adversely affecting organizational culture and be mainstreamed into the security culture.

- ***Listen to concerns.*** Senior managers should be open to hearing concerns about misbehaviors directed at specific demographics and escalate them as necessary, whether from middle managers, junior staff, or other employees.

- ***Center DEI values.*** Senior managers should integrate DEI values into policies around personnel surety and ensure that a range of perspectives inform understandings of risk and threat. They should also work to advance these principles in the nuclear security workplace and ensure that middle management also enforce implementation with their staff.

- ***Create opportunities.*** Senior managers should identify means and opportunities for the organization to systemically hire and advance qualified diverse personnel for nuclear security roles, include them in the workforce, and ensure equitable opportunities to succeed and advance.

- ***Act as an enforcement mechanism.*** Senior managers should ensure that middle managers and other managerial staff are effectively implementing DEI nuclear security culture policies, and incorporate such implementation compliance into the employee review process.[210]

Recommendations for Middle Managers:

- ***Implement a DEI nuclear security culture.*** Nuclear security culture programs, in which middle managers should help practitioners develop more comprehensive approaches to evaluating threats, should include DEI as a core concept fundamental to nuclear security culture and implement as such. These programs can help nuclear security practitioners develop more comprehensive approaches to evaluating threats, and middle managers can help enforce upholding of the nuclear security culture among non-managerial staff.[211]

- ***Collect data.*** Middle managers should encourage personnel that they directly supervise to participate in data collection initiatives by ensuring that personnel have dedicated time during duty hours to participate in organizational culture surveys, exit interviews, and performance assessments at organizations that deal with nuclear security and integrate questions about DEI.[212]

- ***Report outcomes.*** Middle managers should share reporting outcomes with personnel that they supervise to support transparency and be available to answer questions about existing or new initiatives that are produced as an outcome of the reporting.[213]

- ***Participate in DEI initiatives.*** Middle managers should be visible participants in voluntary DEI training, and lead in convening listening sessions or conversations to understand individual and group diversity challenges, barriers to inclusion, retention, and promotion. They should also ensure that their staff are actively participating and engaged in DEI work and seek feedback from staff on whether trainings are effective. They should identify opportunities to advance and promote DEI in the nuclear security workplace.[214]

- ***Listen to concerns.*** Middle managers should be open to hearing concerns from personnel, non-managerial staff, and others that they supervise about misbehaviors directed at specific demographics and escalate them as necessary.

- ***Center DEI values.*** Middle managers should ensure compliance with policies around personnel surety that integrate DEI values, as with other nuclear security obligations, and work to advance these principles in the nuclear security workplace to ensure that their staff also understand and implement these values.

- ***Create opportunities.*** Middle managers should identify means and opportunities to directly implement DEI initiatives, such as hiring and advancing qualified diverse personnel for nuclear security roles, including them in the workforce, and ensuring equitable opportunities to succeed and advance.

PERSONNEL

While the IAEA framework for nuclear security culture emphasizes nuclear facility personnel's personal responsibility, accountability, motivation, compliance, vigilance, and proactive questioning, the WINS *Nuclear Security International Best Practice Guide* perhaps best illustrates the personal attributes and attitudes that must underpin a strong and healthy nuclear security culture, providing critical linkages at the same time between nuclear security culture and DEI culture. The WINS guide describes the attributes of staff working at an organization with a strong nuclear security culture: "If they observe an anomaly or hear something suspicious, they report it unhesitatingly to their supervisors. If they make a mistake themselves, they willingly own up to it, seek to understand how it occurred, and work actively to improve their performance. If they have ideas or suggestions for how to improve security, they share them with their managers and colleagues because they know such contributions are encouraged, respected and rewarded."[215] Furthermore, WINS notes that a strong security culture would hold values including these: "Being a learning organisation is important. Being accountable is important."[216]

Notably, this nuclear security-focused language closely parallels that in literature focused on creating healthy DEI-oriented organizational cultures, which stresses the importance of listening and openness to new ideas, as well as of "growth mindset" and of leaders fostering an atmosphere of psychological safety that allows people to make mistakes, learn from them, and be "…more willing to hold ourselves accountable for our actions."[217] If data collection, analysis, and publication are critical for nuclear security organizations to undertake in holding themselves accountable for improving DEI, then personnel have a corollary role in participating "honestly and critically" in organizational data collection efforts such as culture surveys, interviews, and the like.[218]

A study participant who works as an organizational culture consultant noted the unique challenges faced by personnel when nuclear organizations attempt to implement changes to organizational culture. They noted that the culture an individual grew up with and lives in will trump organizational culture when a decision needs to be made, especially when that individual is "pushed into a corner."[219] Individual identity is formed early in life and solidified when a person reaches their mid-20s, making it difficult for organizations to impose a dramatically different culture on to employees and expect them to adhere to it immediately.[220] With respect to DEI efforts, the participant noted that calls for action and organizational DEI initiatives are not always reflecting individuals' lived experiences outside of the workplace, as they are not being asked to make these changes at home.[221] Resistance to DEI initiatives emerges because "there's conflict between people's lived lives and their organizational lives" and that cultural differences should be "called out" and recognized in order for employees to understand and work with one another.[222] The participant noted that the lack of discussion around DEI challenges can contribute to nuclear security vulnerabilities, as personnel are unable to situate how their own individual cultural behavior is received

in the context of the organizational culture and the culture of their peers, suggesting that the role of individuals has a significant impact on the implementation of a DEI security culture.[223]

Recommendations for Personnel:

- ***Uphold a DEI nuclear security culture.*** Nuclear security culture programs allow personnel to develop more comprehensive approaches to evaluating threats, and should integrate DEI as a core concept fundamental to nuclear security culture. These programs can help nuclear security practitioners develop more comprehensive approaches to evaluating threats and can help with the creation and sustainment of a security culture.[224]

- ***Report.*** Personnel should engage with reporting outcomes and demand transparency about existing or new initiatives that are produced as an outcome of the reporting.

- ***Participate in DEI initiatives.*** Personnel should be visible participants in voluntary DEI training, and participate in conversations to understand individual and group diversity challenges and barriers to inclusion, retention, and promotion.

- ***Revisit intelligence criteria for insider threat risk.*** Communicate how their individual understanding of risk differs from existing insider threat criteria. Personnel surety implementation for security culture should focus on misbehaviors (rather than behaviors) such as sexual harassment, racialized abuse, and religious ostracization as potential insider threat signs, in addition to existing guidance. Indicators flagged should identify counterproductive workplace behaviors or misbehaviors in peers that may be adversely affecting organizational culture.

- ***Voice concerns.*** Personnel should share concerns about misbehaviors directed at specific demographics with managers using existing insider threat processes.

- ***Center DEI values.*** Individuals should embody and advance DEI values in their nuclear security work.

- ***Advance an inclusive dialogue.*** More intersectional understandings of both DEI and initiatives for implementation are essential for diversifying the nuclear security field to account for not only women, but also people of color, members of the LGBTQIA+ community, people with disabilities, and other historically marginalized groups. Individuals should participate with and prompt educated discussion about DEI challenges in the workplace.[225]

- ***Collect data.*** Individuals should honestly and critically participate in organizational culture surveys, exit interviews, and performance assessments at organizations that deal with nuclear security to support continuous evaluation of the composition of the field.[226]

PUBLIC

The general public is yet another critical pillar of a country's DEI nuclear security culture, sharing assumptions and values, setting expectations, demanding transparency, and holding governments, organizations, and individuals accountable. While these attributes apply to individual members of the public as well as to "the public" as a group, it is helpful to consider civil society, or non-governmental,

organizations (CSOs or NGOs), academia, and the media as key members or even leaders of the public. CSOs, NGOs, and academic institutions focused on nuclear security issues should themselves integrate the assumptions that bias harms nuclear security and DEI is vital to strengthening it; promote, explain, and raise awareness about these assumptions among the broader public; and set expectations accordingly for the whole nuclear security enterprise, from the State level to the facility personnel level, for example through communications campaigns. CSOs, academia, and the media can also set expectations, demand transparency, and hold organizations, managers, and states accountable through regular requests for organizational DEI data and by asking hard questions at public events. They can even contribute to progress by developing training and other resources and making them readily available and drawing national attention to nuclear security issues to ensure accountability from organizations and states.

CIVIL SOCIETY ORGANIZATIONS OF NOTE:

World Institute for Nuclear Security (WINS)

In 2022, WINS published its Advancing Gender Equality, Diversity and Inclusion in Nuclear Security self-assessment, evaluation, and action plan tool. The tool provides guidance for assessing an organization's culture for characteristics that ensure that the women and gender-diverse individuals that are hired thrive at the organization and are retained in the long term.[227]

A companion resource, *Reporting Framework for Gender Equality, Diversity and Inclusion,* was published in July 2023 and is designed to assist organizations with responsibility for nuclear security to develop and publish reports that communicate the outcome of their gender equality, diversity, and inclusion programs through the Plan, Prepare, Publish, Promote cycle. It provides the main reporting principles and components.[228]

The WINS guide, *Advancing Gender Parity in Nuclear Security,* also serves as a helpful resource for women in nuclear security. It advocates for diversifying the workforce "by design," arguing that advancing women promotes innovation, performance, talent, and diversity of views, and thus strengthens nuclear security and profitability for nuclear organizations in the long term.[229]

Gender Champions in Nuclear Policy (GCNP)

GCNP is a leadership network that brings together heads of organizations working in nuclear policy who are committed to breaking down gender barriers. Founded in 2018, GCNP includes heads of institutions who address nuclear nonproliferation, nuclear weapons policy, nuclear disarmament, nuclear security, nuclear deterrence, nuclear energy, and other related topics. GCNP's Panel Parity Pledge, in particular, serves as an effective means through which to combat single-gender panels. The group also aims to build networks, skills, mentorship, visibility, voice, and community among women working in the nuclear policy field.[230]

***Women of Color Advancing Peace and Security* (*WCAPS*)**

Founded by Ambassador Bonnie Jenkins in 2017, WCAPS is a network of programs, chapters, and working groups for girls and women of color dedicated to advancing peace and security. In addition to providing an international and intersectional perspective on how diverse candidates strengthen peace and security, WCAPS founded OrgsinSolidarity, an organization dedicated to advancing Black women in the U.S.-national security field by focusing on the root causes of disproportionate and historically rooted discrimination preventing their participation in hard security spaces. WCAPS also features a Chemical, Biological, Radiological and Nuclear Security Policy working group that produces publications that examine the structural causes of exclusion and discrimination in the nuclear policy field, and subsequent challenges that apply to nuclear security and the broader nuclear field.[231]

***Out in National Security* (*ONS*)**

Visible LGBTQIA+ representation within organizations responsible for strengthening nuclear security has been lacking. ONS is "dedicated to empowering queer [U.S.] national security professionals." While it has drawn attention to a broad range of national security areas, participation and focus on queer nuclear experts has helped normalize the notion of LGBTQIA+ folks as nuclear experts in both the policy and security spaces. Advancing LGBTQIA+ participation is important because of the unique perspective that the queer community brings to nuclear security work. In particular, members of the queer community have a long history of having to "code-switch" and assimilate to heteronormative environments. This social dynamic has led queer nuclear security experts to reflect on how their queerness has supported their ability to read and adapt to different environments — an awareness that could help strengthen security culture objectives and peer observation.[232]

***Diversity in National Security Network* (*DINSN*)**

DINSN is a nonprofit bipartisan coalition of national security and foreign policy practitioners committed to diversifying the private and public sectors of national security. DINSN works as a platform and a network to amplify the contributions of diverse practitioners in the U.S. and actively creates opportunities for underrepresented communities to enter and succeed in these sectors.[233]

Civil society represents an engaged public stakeholder within the nuclear security culture network and can work with industry and government as an external partner to develop tailored solutions to implement a DEI nuclear security culture with flexibility and creative license not always afforded to more traditional organizational stakeholders.

Recommendations for Civil Society:

- ***Hold stakeholders accountable.*** Continue work to hold nuclear security organizations accountable for DEI commitments and progress made over time and to track effects of DEI nuclear security culture on nuclear security implementation.

- ***Develop an inclusive dialogue.*** More intersectional understandings of both DEI and initiatives for implementation are essential for diversifying the nuclear security field to account for not only women, but also people of color, members of the LGBTQ+ community, people with disabilities, and other historically marginalized groups.

- ***Analyze reporting trends and data collection.*** Civil society can critique methodologies for data collection, track reporting trends, and analyze DEI data to demonstrate whether organizations are accurately representing DEI data and sharing initiative outcomes or are using data to improve their own reputation.

- ***Collaborate with nuclear security stakeholders.*** CSOs and NGOs can use the creative control and flexibility afforded to them to work with other nuclear security organizations and state authorities as an external partner to support the development of tailored solutions to implement a DEI nuclear security culture.

Recommendations for Academia

- ***Create a diverse pipeline of nuclear security professionals.*** Many academic institutions serve as gatekeepers to careers in nuclear security policy and should ensure that DEI values are central to admissions processes to ensure participation by underrepresented groups. Academic work to center DEI values as crucial to nuclear security within a nuclear security education is essential to creating a sustainable nuclear security culture and a diverse future generation of nuclear security practitioners and decision-makers.

- ***Complement and collaborate with CSO/NGO actors.*** Academic institutions contribute to nuclear security in many of the same ways as civil society organizations. Ensuring that these efforts are reflective of the Civil Society Recommendations above and are synergistic and collaborative will advance the shared goal of centering DEI as a set of values important to nuclear security.

Recommendations for the Media

- ***Educate the public on DEI issues and DVE threats to nuclear security.*** The free press plays an important role in raising awareness among the public on issues relating to nuclear security. Drawing attention to incidents and reports that highlight the diverse range of threats, including DVE threats, to nuclear facilities is important for public awareness and safety for nuclear and other critical infrastructure. Further, by reporting on issues relating to DEI, the press assigns value to these topics, and therefore also raises the profile of the issue and why it matters with the general public.

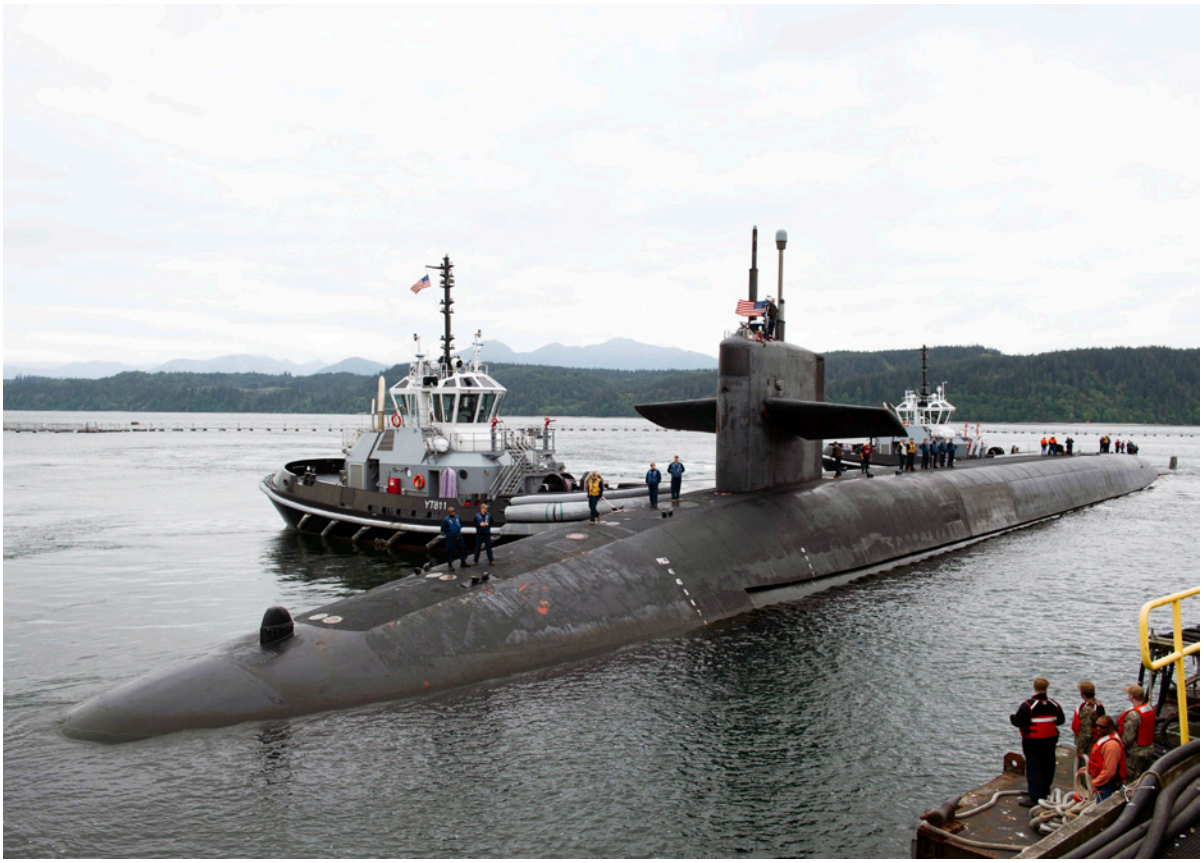
- ***Provide a platform for underrepresented communities when featuring nuclear security experts.*** Media outlets often engage with experts to share insight on niche nuclear security issues with a more general audience. Ensuring that the experts featured are from a broad range of backgrounds, positions, and experiences ensures that a diverse range of nuclear security professionals are given the opportunity to be considered experts and includes them as knowledge producers and leaders in the field.

- ***Draw attention to DEI issues in nuclear security.*** When DEI issues emerge in the nuclear security space, the media can play a valuable role in educating the public and holding decision-makers, responsible

personnel, and organizations accountable for creating an unfair, exclusive, and homogenous work environment that results in nuclear security vulnerabilities. As many nuclear organizations rely on positive relationships with local communities and stakeholders to continue operations and reduce security risks, raising awareness of these issues with the public is crucial for creating cultural change to embrace DEI as an asset to security.

CREATING FULL-SPECTRUM ENGAGEMENT AND IMPACT AT ORGANIZATIONAL LEVELS

Engagement on the intersection of DEI and nuclear security is needed both among different stakeholder groups and between different organizational hierarchical levels and roles within a facility. IAEA guidance notes that, "[a]n effective nuclear security culture depends upon teamwork and cooperation among all personnel involved in security. Personnel must understand how their particular roles and interfaces contribute to maintaining security."[234] A sustainable DEI nuclear security policy requires effective communication between stakeholders who are essential for consistent implementation. As illustrated in IAEA guidance, the United States has many diverse organizations concerned with nuclear security, some of which "may have little technical knowledge about nuclear or other radioactive material. This lends greater weight to the need for effective structural, communication, information and exchange systems, and the integration of the functions of these diverse organizations into a unified nuclear security culture."[235]



Ohio-class ballistic missile submarine USS Nevada. U.S. Navy photo by Mass Communication Specialist 1st Class Brian G. Reynolds.

8. Conclusion

From the inception of the nuclear security field, women, people of color, and other marginalized communities have faced numerous barriers to entry, advancement, and acknowledgment of their contributions to the field. Understanding how bias not only excludes certain communities from the field, but also bakes in structural nuclear security vulnerabilities, is crucial to countering the effects of prejudice in nuclear security implementation.

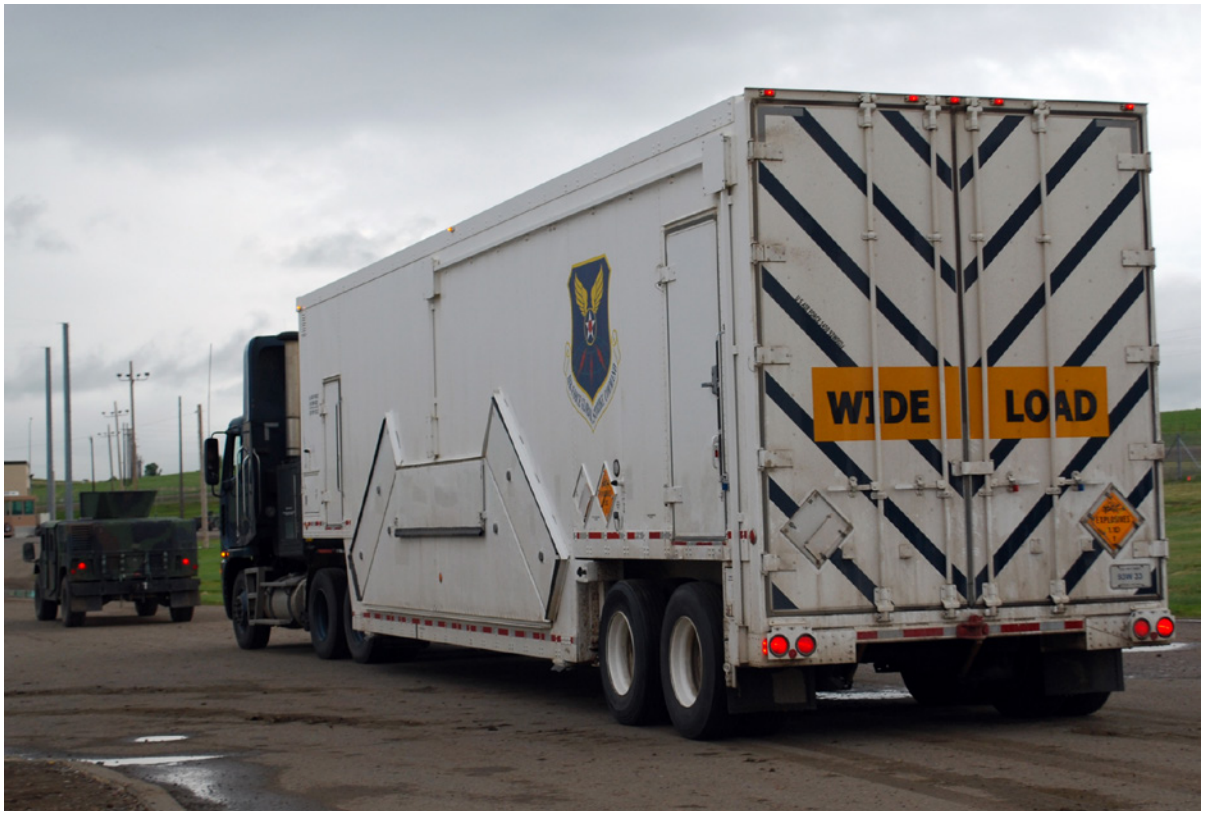
Though some participants were skeptical at the start of their engagement in the research project, by the conclusion of the relevant workshop, interview, or survey, a majority of study participants agreed that bias may be causing nuclear security vulnerabilities and exacerbating DEI challenges. However, in a notable contrast from the conclusions of their peers in government and civil society, the industry participants argued that bias had no role in the nuclear security processes or implementation at their organizations.[236] Industry participants all communicated confidence in the reliability and objectivity of their security protocols in mitigating threats, but examples like the Babbitt case demonstrate that there may be cracks in the system. The results of the human subject research, in combination with the comprehensive desk research done during the course of the study, demonstrate that systemic bias is a product of cultural attitudes and preconceptions that manifest in assumptions about behaviors of certain groups — these assumptions can further manifest as individual biases that are further developed through lived experiences and more localized social influences. These biases are a product of society, and while industry facilities may have more advanced nuclear security screening methods, developed insider threat programs, and successful DEI initiatives, the lack of transparency around these systems and programs made it difficult for the research team to identify how they accounted for and mitigated the effects of bias in industry nuclear security implementation.

Given that government and civil society stakeholders all largely agreed that bias likely influences nuclear security, further engagement with industry stakeholders is needed. Work needs to be done to determine whether nuclear industry is so far ahead of the curve on bias mitigation that other stakeholders can use lessons learned to strengthen nuclear security, or whether industry leaders are underestimating or ignoring the potential effects of bias on nuclear security implementation. Broader sampling and continued engagement with stakeholders in the field, especially industry, is essential for understanding exactly where structural bias affects the design and values underpinning nuclear security processes, how individual practitioner bias might go unchecked during implementation of nuclear security culture and insider threat programs, and why some stakeholders may have more success than others when it comes to addressing bias in the workplace.

A DEI nuclear security culture is a sustainable solution to current challenges facing U.S. nuclear security practitioners — but it requires systemic changes across a broad range of stakeholders to be sustainable and

effective in the long term. This solution also requires further research to understand how structural biases manifest in each nuclear workplace and how policies, institutional culture, and individuals must adapt to new priorities in a range of cultural environments. A DEI organizational culture is a necessary foundation for broader goals like gender parity, stronger racial diversity, and more equitable and inclusive nuclear facilities — and integrating these values into nuclear security culture can help center these principles as essential to developing an effective security culture.

Undoing bias and developing a diverse, equitable, and inclusive nuclear security culture is multistakeholder work that requires buy-in across a nuclear security regime and necessitates a tailored approach to deal with each unique cultural context. The analysis and recommendations in this publication aim not only to deepen the understanding of the issue and promote action, but to demonstrate how much more work is needed in this space. Further engagement with stakeholders is needed to solicit feedback on the solutions proposed in this paper, other U.S. stakeholders need to be identified to ensure a comprehensive reflection of the field, and recommendations need to be audited for feasibility and concrete first steps. This paper is only one step out of many needed to address the intersectional nature of barriers to entry, retention, and advancement for underrepresented communities in the field. Bias is a global issue, and while this paper focuses on the U.S., many of its proposals are relevant to international nuclear security stakeholders — and further work is needed in partnership with nuclear states around the world. Considerable efforts need to be taken by states, organizations, individuals, and the public to understand how bias affects nuclear security and understand the root causes of DEI challenges for historically excluded groups in nuclear security — not only in the U.S., but around the world.



Nuclear weapons transport convoy. U.S. Air Force photo by Senior Airman Katrina Heikkinen.

Endnotes

1 International Atomic Energy Agency, "Nuclear Security Culture," in *IAEA Nuclear Security Series No. 7* (Vienna: IAEA, 2008): 4, https://www-pub.iaea.org/MTCD/Publications/PDF/Pub1347_web.pdf.

2 Seamus Hughes and Ilana Krill, "Assessing US Domestic Extremism in Light of Capitol Riot Investigations," *International Centre for Counter-Terrorism* (June 30, 2022): https://www.icct.nl/publication/assessing-us-domestic-extremism-light-capitol-riot-investigations.

3 Eileen Sullivan and Katie Benner, "Top law enforcement officials say the biggest domestic terror threat comes from white supremacists." *The New York Times* (May 12, 2021), https://www.nytimes.com/2021/05/12/us/politics/domestic-terror-white-supremacists.html.

4 Federal Bureau of Investigation and Department of Homeland Security, "Strategic Intelligence Assessment and Data on Domestic Terrorism," Submitted to the Permanent Select Committee on Intelligence, the Committee on Homeland Security, and the Committee of the Judiciary of the United States House of Representatives, and the Select Committee on Intelligence, the Committee on Homeland Security and Governmental Affairs, and the Committee of the Judiciary of the United States Senate, (October 2022), 2, https://www.fbi.gov/file-repository/fbi-dhs-domestic-terrorism-strategic-report.pdf/view.

5 FBI and DHS, "Strategic Intelligence Assessment and Data on Domestic Terrorism," 7.

6 DHS, FBI, U.S. National Counterterrorism Center (NCTC), *US Violent Extremist Mobilization Indicators Booklet*, Open-file report 2021-09234 (Washington, D.C., 2021), 3, https://www.dni.gov/files/NCTC/documents/news_documents/Mobilization_Indicators_Booklet_2021.pdf.

7 Anti-Defamation League, "White Supremacists Embrace 'Accelerationism,'" *Anti-Defamation League Blog,* (April 16, 2019), https://www.adl.org/resources/blog/white-supremacists-embrace-accelerationism.

8 Mapping Militants Project, "Atomwaffen Division/National Socialist Order," *Stanford University Center for International Security and Cooperation,* (last modified August 2022), https://cisac.fsi.stanford.edu/mappingmilitants/profiles/atomwaffen-division.

9 Mapping Militants Project, "Atomwaffen Division/National Socialist Order."

10 Catherine Morehouse, "Physical Attacks on Power Grid Surge to New Peak," *Politico* (December 26, 2022), https://www.politico.com/news/2022/12/26/physical-attacks-electrical-grid-peak-00075216.

11 Interview with leading expert on white supremacist terrorism, May 2, 2023.

12 Greg Harmon, "Rising Nazi Terror and Nuclear Power Risk: A Conversation with Edwin Lyman of the Union of Concerned Scientists," *Deceleration,* (February 13, 2023), https://deceleration.news/2023/02/13/rising-nazi-terror-and-nuclear-power-risk/.

13 Harmon, "Rising Nazi Terror and Nuclear Power Risk."

14 Janet Reitman, "All-American Nazis," *Rolling Stone* (May 2, 2018), https://www.rollingstone.com/politics/politics-news/all-american-nazis-628023/.

15 Hughes and Krill, "Assessing US Domestic Extremism in Light of Capitol Riot Investigations"; Daniel Milton and Andrew Mines, "'This Is War': Examining Military Experience Among the Capitol Hill Siege Participants," *George Washington University, Program on Extremism* (April 2021), 18, https://extremism.gwu.edu/sites/g/files/zaxdzs5746/files/This_is_War.pdf.

16 Seth G. Jones, Catrina Doxsee, and Grace Hwang, "The Military, Police, and the Rise of Terrorism in the United States," *CSIS Briefs* (Washington, D.C.: CSIS, April 2021), https://www.csis.org/analysis/military-police-and-rise-terrorism-united-states.

[17] Rachel Goldwasser, "Extremism Among Active-Duty Military and Veterans Remains a Clear and Present Danger" in *Hatewatch* (Montgomery: Southern Poverty Law Center, October 12, 2021), https://www.splcenter.org/hatewatch/2021/10/12/extremism-among-active-duty-military-and-veterans-remains-clear-and-present-danger.

[18] A. C. Thompson, "An Atomwaffen Member Sketched a Map to Take the Neo-Nazis Down. What Path Officials Took Is a Mystery," *ProPublica* (November 20, 2018), https://www.propublica.org/article/an-atomwaffen-member-sketched-a-map-to-take-the-neo-nazis-down-what-path-officials-took-is-a-mystery.

[19] Mapping Militants Project, "Atomwaffen Division/National Socialist Order."

[20] Scott Sagan, *Protecting Against Insider Threats* (virtual presentation given at the Stimson Center to the International Nuclear Security Forum, March 24, 2021), https://www.stimson.org/event/protecting-against-insider-threats/.

[21] Milton and Mines, "'This Is War.'"

[22] Amina A. Neville, Julie Fenderson, and Stephanie L. Jaros, "'Maybe It's Me'—A Visual Campaign to Encourage Self-Awareness & Self-Improvement in the Workforce," OPA Report No. 2021-038, The Threat Lab (Seaside: Defense Personnel and Security Research Center, June 2021), 1, https://www.dhra.mil/Portals/52/Documents/perserec/20210706_PERS_Rpt_RN-21-01_Maybe-It's-Me.pdf.

[23] Milton and Mines, "'This Is War.'"

[24] Sneha Nair, "Reimagining U.S. foreign policy as an anti-racist endeavor," in *Equality and Racial Justice: Where Do They Fit in a National Security Strategy?* (Washington, D.C.: New America, 2022), https://www.newamerica.org/political-reform/reports/equity-and-racial-justice-where-do-they-fit-in-a-national-security-strategy/reimagining-us-foreign-policy-as-an-anti-racist-endeavor-by-sneha-nair/.

[25] Rogers M. Smith and Desmond King, "White Protectionism in America" in *Perspectives on Politics,* Volume 19, Issue 2, (June 2021), 460–478, https://www.cambridge.org/core/journals/perspectives-on-politics/article/white-protectionism-in-america/466CB9F794DBC364C79B401EA81ADDD5.

[26] Michael German, *Disrupt, Discredit, Divide: How the New FBI Damages Democracy* (New York, The New Press, 2019), 65-88.

[27] Danielle Holt & Susan Davis, "Interrupting Bias in Army Talent Management," Parameters 52, no. 1 (2022): 26-28, doi:10.55540/0031-1723.3127.

[28] Tepring Piquado, Sina Beaghley, Lisa Pelled Colabella, and Nahom M. Beyene, *Assessing the Potential for Racial Bias in the Security Clearance Process,* (Santa Monica, CA: RAND Corporation, August 2022), 9-12, https://www.rand.org/pubs/research_reports/RRA1201-1-v2.html.

[29] Bonnie Jenkins, "Redefining Our Concept of Security," in *Order from Chaos* (Washington, D.C.: Brookings Institution, 2019), https://www.brookings.edu/blog/order-from-chaos/2019/12/04/redefining-our-concept-of-security/.

[30] Sneha Nair, "Diversity, Equity, and Inclusion in Nuclear Security Culture: Insider Threat Assessments at Nuclear Facilities" (Conference paper and presentation, Institute of Nuclear Materials Management 65th Annual Meeting, Virtual, July 27, 2022), 3, https://www.stimson.org/2022/diversity-equity-and-inclusion-in-nuclear-security-culture-insider-threat-assessments-at-nuclear-facilities/.

[31] Matthew Bunn and Scott Sagan, *A Worst Practice Guide to Insider Threats: Lessons from Past Mistakes* (Cambridge, U.S.A.: American Academy of Arts & Sciences, 2014), https://www.amacad.org/sites/default/files/publication/downloads/insiderThreats.pdf; Sullivan and Benner, "Top law enforcement officials say the biggest domestic terror threat comes from white supremacists."

[32] German, *Disrupt, Discredit, Divide*, 16-17.

[33] Workshop on DVE with security experts, May 4, 2023.

[34] Workshop on DVE with security experts, May 4, 2023.

[35] Interview with senior nuclear facility executive, May 19, 2023; Interview with government expert, July 14, 2023; Interview with public sector nuclear security and DEI expert, July 10, 2023.

[36] U.S. Government Accountability Office (GAO), *Nuclear Security: DOE Should Take Actions to Fully Implement Insider Threat Program,* GAO-23-105576 (Washington, D.C., 2023), 34, https://www.gao.gov/assets/gao-23-105576.pdf.

[37] Workshop on DVE with industry security experts, June 1, 2023.

[38] Hannah Gais, "A New 'War on Terrorism' Is the Wrong Way to Fight Domestic Extremists," *The New Republic,* (May 18, 2021), https://newrepublic.com/article/162229/war-domestic-terrorism-stop-far-right-extremists; Interview with senior nuclear facility executive, May 19, 2023.

[39] Gais, "A New 'War on Terrorism.'"

[40] Michael Edison Hayden, "U.S. State Department Official Involved in White Nationalist Movement, Hatewatch Determines," *Southern Poverty Law Center,* (August 7, 2019), https://www.splcenter.org/gebert.

[41] Abigail Williams and Corky Siemaszko, "State Department Worker Outed by Civil Rights Group as a White Nationalist Placed on Leave," *NBC News,* (August 7, 2019), https://www.nbcnews.com/news/us-news/state-department-worker-had-secret-other-life-white-nationalist-right-n1040101.

[42] Peter Jamison et al., "'The Storm Is Here': Ashli Babbitt's Journey from Capital 'Guardian' to Invader," *The Washington Post* (January 10, 2021), https://www.washingtonpost.com/dc-md-va/2021/01/09/ashlibabbitt-capitol-shooting-trump-qanon/; Nair, "Diversity, Equity, and Inclusion in Nuclear Security Culture."

[43] Ellen Barry, Nicholas Bogel-Burroughs, and Dave Philipps, "Woman Killed in Capitol Embraced Trump and QAnon," *The New York Times* (August 23, 2021), https://www.nytimes.com/2021/01/08/us/who-was-ashli-babbitt.html; Nair, "Diversity, Equity, and Inclusion in Nuclear Security Culture."

[44] Michael Biesecker, "Ashli Babbitt a Martyr? Her Past Tells a More Complex Story," *Associated Press* (January 3, 2022), https://apnews.com/article/ashli-babbitt-capitol-siege-a15c7e52a04d932972b7a284c7a8f7df.

[45] Lilly Price and Tim Prudente, "Woman Fatally Shot During Riot at U.S. Capitol Formerly Lived in Annapolis, Worked at Calvert Cliffs Nuclear Plant," *Baltimore Sun* (January 7, 2021), https://www.baltimoresun.com/maryland/bs-woman-shot-capitol-ashli-babbitt-maryland-20210107-ayn7y45vbbamnmneqrq3ao4ta4-story.html; Rebecca L. Earnhardt, Brendan Hyatt, and Nickolas Roth, "A Threat to Confront: Far-Right Extremists and Nuclear Terrorism," *Bulletin of the Atomic Scientists* (January 14, 2021), https://thebulletin.org/2021/01/a-threat-to-confront-far-right-extremists-and-nuclear-terrorism/; Nair, "Diversity, Equity, and Inclusion in Nuclear Security Culture."

[46] Workshop on DEI with industry security experts, June 1, 2023.

[47] Interview with intelligence and security specialist, July 12, 2023.

[48] Jessica Bufford, "Nuclear Security: The IAEA Faces the Future," *Arms Control Today* (May 2020), https://www.armscontrol.org/act/2020-05/features/nuclear-security-iaea-faces-future#endnote06.

[49] Heather Hurlburt, Elizabeth Weingarten, Alexandra Stark, and Elena Sourisuono, "The 'Consensual Straitjacket': Four Decades of Women in Nuclear Security," *New America* (March 5, 2019), https://www.newamerica.org/political-reform/reports/the-consensual-straitjacket-four-decades-of-women-in-nuclear-security/.

[50] Hurlburt et al., "The 'Consensual Straitjacket.'"

[51] The National Laboratories, "Demographic Data for the National Labs," *U.S. Department of Energy* (March 31, 2017), https://nationallabs.org/staff/diversity/.

[52] National Nuclear Security Administration, "NNSA Workforce Diversity Statistics Report," *NNSA Office of Civil Rights* (January 3, 2021), https://www.energy.gov/nnsa/articles/nnsa-workforce-diversity-statistics-report.

[53] The National Laboratories, "Demographic Data for the National Labs."

[54] The National Laboratories, "Demographic Data for the National Labs."

[55] U.S. Government Accountability Office, *Sexual Harassment: NNSA Could Improve Prevention and Response Efforts in Its Nuclear Security Forces*, GAO-21-307 (Washington, D.C.: 2021), 8, https://www.gao.gov/assets/gao-21-307.pdf.

[56] U.S. Department of Defense, "Portrait of Black/African American Service Members" (2022), https://diversity.defense.gov/Portals/51/Documents/Black-African%20American%20Infographics_2022.pdf?ver=np6zIzkDPlDc_Woucdc3qA%3d%3d.

[57] U.S. Department of Defense, "Recommendations to Improve Racial and Ethnic Diversity and Inclusion in the U.S. Military," *DOD Board on Diversity and Inclusion Report* (Washington, D.C.: DOD, December 17, 2020), 7-11, https://media.defense.gov/2020/Dec/18/2002554852/-1/-1/0/DOD-DIVERSITY-AND-INCLUSION-FINAL-BOARD-REPORT.PDF.

[58] DOD, "Recommendations to Improve Racial and Ethnic Diversity and Inclusion in the U.S. Military," 11.

[59] U.S. Department of Defense, "2021 Demographics Profile: Navy Active Duty Members" (Washington, D.C.: DOD, 2021), https://download.militaryonesource.mil/12038/MOS/Infographic/2021-demographics-active-duty-navy-members.pdf.

[60] U.S. Navy, "Task Force One Navy Final Report" (Washington, D.C.: DOD, 2021), 15, https://media.defense.gov/2021/Jan/26/2002570959/-1/-1/1/TASK%20FORCE%20ONE%20NAVY%20FINAL%20REPORT.PDF.

[61] U.S. Navy, "Task Force One Navy Final Report," 17.

[62] U.S. Navy, "Task Force One Navy Final Report," 17.

[63] U.S. Air Force, "Military Demographics" (Washington, D.C.: DOD, 2023), 1, https://www.afpc.af.mil/Portals/70/documents/DEMOGRAPHICS/DEMO1LINER_05APR23.pdf?ver=9BGHEeBozgOXWWHFB9sobg%3d%3d.

[64] U.S. Air Force, "Military Demographics," 1.

[65] U.S. Air Force, "Report Inquiry (S8918P) Independent Racial Disparity Review," *The Inspector General Department of the Air Force* (Washington, D.C.: DOD, 2020), 3-4, https://www.af.mil/Portals/1/documents/ig/IRDR.pdf.

[66] U.S. Air Force, "Report Inquiry (S8918P)," 15, 21, 25, https://www.af.mil/Portals/1/documents/ig/IRDR.pdf.

[67] Federal Bureau of Investigation, "FBI Diversity Report: Who Makes Up Our Workforce?" (Washington, D.C.: FBI, 2023), 2, https://fbijobs.gov/sites/default/files/2022-05/Report_Diversity.pdf.

[68] Office of the Director of National Intelligence, "Annual Demographic Report: Hiring and Retention of Minorities, Women, and Persons with Disabilities in the United States Intelligence Community" (Washington, D.C.: ODNI, 2021), 9-10, https://www.dni.gov/files/IC-DEI/AnnualReports/FY21_IC_Annual_Demographic_Report.pdf.

[69] ODNI, "Annual Demographic Report," 9-10.

[70] ODNI, "Annual Demographic Report," 20.

[71] ODNI, "Annual Demographic Report," 32.

[72] U.S. Department of Energy, "United States Energy & Employment Report 2023" (Washington, D.C.: DOE, 2023), 37, https://www.energy.gov/sites/default/files/2023-06/2023%20USEER%20REPORT-v2.pdf.

[73] https://www.energy.gov/sites/default/files/2023-06/2023%20USEER%20REPORT-v2.pdfDOE, "United States Energy & Employment Report 2023," 37.

[74] DOE, "United States Energy & Employment Report 2023," 37.

[75] "Institutional bias," *Oxford Reference,* accessed August 24, 2023, https://www.oxfordreference.com/display/10.1093/oi/authority.20110803100005347.

[76] Catherine Hill, Christianne Corbett, and Andresse St. Rose, *Why So Few? Women in Science, Technology, Engineering, and Mathematics* (Washington, D.C.: AAUW, 2010), xvi, https://www.aauw.org/app/uploads/2020/03/why-so-few-research.pdf.

[77] Hill et al., *Why So Few?*, xvi.

[78] Elizabeth M. Trobough, "Women, Regardless: Understanding Gender Bias in U.S. Military Integration," *Joint Force Quarterly* 88 (2018), https://ndupress.ndu.edu/Publications/Article/1411860/women-regardless-understanding-gender-bias-in-us-military-integration/.

[79] Workshop on DEI with industry security experts, June 1, 2023.

[80] Interview with intelligence and security specialist, July 12, 2023; Anonymous survey response.

[81] Interview with senior government leader, May 23, 2023; Anonymous survey response.

[82] Workshop on DEI with civil society security experts, March 20, 2023.

[83] Hurlburt et al., "The 'Consensual Straitjacket.'"

[84] GAO, *Sexual Harassment: NNSA,* GAO-21-307, 1-2.

[85] GAO, *Sexual Harassment: NNSA,* GAO-21-307, 14.

[86] Interview with nuclear industry executive, April 20, 2023.

[87] Workshop on DEI with industry security experts, June 1, 2023.

[88] Interview with nuclear industry executive, April 20, 2023; Interview with senior government leader, May 23, 2023; Interview with public sector nuclear security and DEI expert, July 10, 2023; Michelle Alexander, *The New Jim Crow: Mass Incarceration in the Age of Colorblindness* (New York: The New Press, 2020), 122-129.

[89] Piquado et al., *Assessing the Potential for Racial Bias in the Security Clearance Process,* 9-12.

[90] Interview with senior government leader, May 23, 2023.

[91] Workshop on DEI with civil society security experts, March 20, 2023.

[92] Workshop on DEI with civil society security experts, March 20, 2023.

[93] Interview with public sector nuclear security and DEI expert, July 10, 2023.

[94] Anonymous survey responses; interview with public sector nuclear security and DEI expert, July 10, 2023.

[95] Interview with public sector nuclear security and DEI expert, July 10, 2023.

[96] Hurlburt et al., "The 'Consensual Straitjacket.'"

[97] Hurlburt et al., "The 'Consensual Straitjacket.'"

[98] Carlos Diaz Ruiz and Tomas Nilsson, "Disinformation and Echo Chambers: How Disinformation Circulates on Social Media Through Identity-Driven Controversies," *Journal of Public Policy & Marketing* 42 (1) (May 16, 2023), 19, https://doi.org/10.1177/07439156221103852; Megan A. Brown, Jonathan Nagler, James Bisbee, Angela Lai, and Joshua A. Tucker, "Echo Chambers, Rabbit Holes, and Ideological Bias: How YouTube Recommends Content to Real Users," *Brookings Institution* (October 13, 2022), https://www.brookings.edu/articles/echo-chambers-rabbit-holes-and-ideological-bias-how-youtube-recommends-content-to-real-users/.

[99] Interview with senior government leader, May 23, 2023.

[100] Earnhardt, Hyatt, and Roth, "A Threat to Confront"; Sneha Nair, *Converging Goals: Examining the Intersection Between Diversity, Equity, and Inclusion and Nuclear Security Implementation* (discussion paper/presentation for Nuclear Threat Initiative's 16th Global Dialogue on Nuclear Security Priorities, April 12-14, 2023), 9, https://www.nti.org/wp-content/uploads/2023/07/GD-Paper_Converging-Goals-Examining-the-Intersection-Between-Diversity-Equity-and-Inclusion-and-Nuclear-Security-Implementation.pdf.

[101] Interview with public sector nuclear security and DEI expert, July 10, 2023; Interview with senior nuclear facility executive, May 19, 2023.

[102] Interview with senior nuclear facility executive, May 19, 2023.

[103] Interview with public sector nuclear security and DEI expert, July 10, 2023.

[104] Nair, "Diversity, Equity, and Inclusion in Nuclear Security Culture," 9.

[105] Interview with senior nuclear facility executive, May 19, 2023.

[106] Nair, *Converging Goals,* 9-10.

[107] Interview with public sector nuclear security and DEI expert, July 10, 2023; Interview with senior nuclear facility executive, May 19, 2023.

[108] Workshop on DVE with security experts, May 4, 2023.

[109] Glenn Thrush, "Airman Who Leaked Files Is Indicted on Charges of Mishandling Secrets," *The New York Times,* June 15, 2023, https://www.nytimes.com/2023/06/15/us/politics/jack-teixeira-indicted-document-leaks.html; Thomas Brewster, "Exclusive: Pentagon Investigates 'Critical Compromise' of Air Force Communications Systems," *Forbes* (July 29, 2023), https://www.forbes.com/sites/thomasbrewster/2023/07/29/exclusive-pentagon-suffers-critical-compromise-of-air-force-communications/?sh=61c4ad713198.

[110] Shane Harris, Samuel Oakford, and Chris Dehghanpoor, "Alleged Leaker Fixated on Guns and Envisioned 'Race War,'" *The Washington Post*, May 13, 2023, https://www.washingtonpost.com/national-security/2023/05/13/jack-teixeira-discord-leaked-documents/.

[111] Katie Benner, "A Nuclear Site Guard Accused Colleagues of Sexual Assault. Then She Was Fired," *The New York Times*, January 25, 2019, https://www.nytimes.com/2019/01/25/us/politics/department-of-energy-sexual-assault.html; Sneha Nair and Nickolas Roth, *Building a Diverse, Equitable, and Inclusive Nuclear Security Culture* (conference paper/presentation, Institute of Nuclear Materials Management 66th Annual Meeting, May 22-26, 2023), 4, https://s3.amazonaws.com/amz.xcdsystem.com/C71088C7-B99C-5E2B-0E34A3B4FDFFD247_abstract_File3526/FinalPaper_546_0516033128.pdf.

[112] GAO, *Sexual Harassment: NNSA,* 14-17.

[113] Interview with public sector nuclear security and DEI expert, July 10, 2023.

[114] Interview with public sector nuclear security and DEI expert, July 10, 2023.

[115] Interview with senior government expert, July 13, 2023.

[116] Neville, Fenderson, and Jaros, *'Maybe It's Me*;' Nair, "Diversity, Equity, and Inclusion in Nuclear Security Culture," 8-9.

[117] Neville, Fenderson, and Jaros, *'Maybe It's Me,'* 3.

[118] Nair and Roth, *Building a Diverse, Equitable, and Inclusive Nuclear Security Culture,* 3-4.

[119] Nair, *Converging Goals*, 5-6; Nair and Roth, *Building a Diverse, Equitable, and Inclusive Nuclear Security Culture.*

[120] Nair, *Converging Goals,* 6.

[121] German, *Disrupt, Discredit, Divide,* 65-88; Nair, "Diversity, Equity, and Inclusion in Nuclear Security Culture," 9; Nair, Converging Goals, 9-10.

[122] German, *Disrupt, Discredit, Divide,* 65-88; Nair, "Diversity, Equity, and Inclusion in Nuclear Security Culture," 9; Piquado et al., "Assessing the Potential for Racial Bias in the Security Clearance Process," 11-12.

[123] Kimberly Lewis Parsons and Shea O'Neil Adelson, "Make Inclusive Behaviors Habitual on Your Team," *Harvard Business Review,* May 9, 2023, https://hbr.org/2023/05/make-inclusive-behaviors-habitual-on-your-team?utm_medium=email&utm_source=newsletter_daily&utm_campaign=dailyalert_actsubs&utm_content=signinnudge&deliveryName=DM273893&fbclid=IwAR3uJdrgFPC3fNuZDmNmN9yiVBkekYds3VNf6FS0WtC38e7fi14tMACMx4M.

[124] IAEA, "Nuclear Security Culture," 12-16.

[125] Nair, *Converging Goals*, 5.

[126] Interview with public sector nuclear security and DEI expert, July 10, 2023.

[127] Interview with senior nuclear facility executive, May 19, 2023.

[128] Nair, *Converging Goals,* 3.

[129] Nair and Roth, *Building a Diverse, Equitable, and Inclusive Nuclear Security Culture,* 3-4.

[130] U.S. Energy Information Service, "U.S. Nuclear Electricity Generation Continues to Decline as More Reactors Retire," *Today in Energy,* April 8, 2022, https://www.eia.gov/todayinenergy/detail.php?id=51978.

[131] Steven Singer, "Nuclear Power Gets Another Look in 'All-of-the-Above' Energy Approach as Climate Worries Mount," *Utility Dive,* January 20, 2023, https://www.utilitydive.com/news/nuclear-power-smr-climate-ira-omnibus-spending/639484/.

[132] Mark Holt, "Advanced Nuclear Reactors: Technology Overview and Current Issues" (Washington, D.C.: Congressional Research Service, 2023), 27, https://crsreports.congress.gov/product/pdf/R/R45706https://www.everycrsreport.com/files/20190418_R45706_86fb03d4ca6ab0e3f37bb71cfe23f44274a0ce84.pdf.

[133] IAEA, *Energy, Electricity and Nuclear Power Estimates for the Period up to 2050* (Vienna: IAEA, 2023), 32-37, https://www.iaea.org/newscenter/pressreleases/iaea-projections-for-nuclear-power-growth-increase-for-second-year-amid-climate-energy-security-concerns.

[134] Interview with nuclear industry security expert, June 23, 2023.

[135] Interview with nuclear industry executive, April 20, 2023.

[136] U.S. Census Bureau, "Quick Facts Idaho Falls City, Idaho; United States" (Population Estimates July 1, 2022), accessed August 24, 2023, https://www.census.gov/quickfacts/fact/table/idahofallscityidaho,US/PST045222.

[137] Idaho National Laboratory, "Employee Demographics: Our People — Our Greatest Strength" (October 2022), accessed July 16, 2023, https://inlcareers.inl.gov/Demographics.

[138] U.S. Census Bureau, "Quick Facts New Mexico" (Population Estimates July 1, 2022), accessed August 24, 2023, https://www.census.gov/quickfacts/fact/table/NM/PST045222.

[139] Los Alamos National Laboratory, "Inclusion and Diversity" (July 1, 2022), accessed July 16, 2023, https://lanl.jobs/creative/about-diversity.

[140] Interview with public sector nuclear security and DEI expert, July 10, 2023.

[141] Tennessee Valley Authority, *Connection. Culture. Community: Diversity, Equity, Inclusion and Accessibility Report FY 2022* (Knoxville, TN, 2023), 11, https://www.tva.com/careers/diversity-inclusion/diversity-report.

[142] Interview with senior government leader, May 23, 2023.

[143] U.S. Office of Personnel and Management, Office of Diversity, Equity, Inclusion, and Accessibility, *Government-wide DEIA: Our Progress and Path Forward to Building a Better Workforce for the American People, Annual Report 2022* (Washington, D.C.: U.S. Office of Personnel and Management, 2023) 5-7, https://www.opm.gov/policy-data-oversight/diversity-equity-inclusion-and-accessibility/reports/DEIA-Annual-Report-2022.pdf.

[144] National Nuclear Security Administration, "NNSA Workforce Diversity Statistics Report."

[145] U.S. Department of Energy, Office of Science, "DOE Laboratory DEI and Workforce Demographics," accessed August 24, 2023, https://science.osti.gov/SW-DEI/Advancing-DEI-for-the-SC-Mission/Advancing-DEI-at-the-DOE-National-Laboratories/DOE-Laboratory-DEI-and-Workforce-Demographics.

[146] U.S. Navy, MyNavy HR, "Diversity, Equity, & Inclusion," last modified April 3, 2023, https://www.mynavyhr.navy.mil/Support-Services/Culture-Resilience/Diversity-Equity-Inclusion/.

[147] U.S. Air Force, Air Force's Personnel Center, "Air Force Demographics," accessed August 24, 2023, https://www.afpc.af.mil/The-Air-Forces-Personnel-Center/Demographics/.

[148] U.S. Equal Employment Opportunity Commission, "EEO-1 Data Collection," accessed August 24, 2023, https://www.eeoc.gov/data/eeo-1-data-collection.

[149] Allen Smith, "How Do the EEOC and OFCCP Use EEO-1 Reports?" *SHRM,* September 17, 2019, https://www.shrm.org/resourcesandtools/legal-and-compliance/employment-law/pages/eeoc-ofccp-use-eeo-1-reports.aspx#:~:text=The%20agency%20uses%20the%20data,within%20companies%2C%20industries%20or%20regions; Ashley M. Orme, "Big Companies Are Already Collecting Important Data on Workforce Diversity. More of Them Need to Make It Public," *Fortune,* February 9, 2022, https://fortune.com/2022/02/09/diversity-inclusion-dei-intersectional-data-eeo-1-reports/.

[150] U.S. Department of Energy, "United States Energy & Employment Report 2023," 38-42.

[151] The companies compared were Constellation Energy Corp., Dominion Energy Inc., Duke Energy Corp., Entergy Nuclear, NextEra Energy, Public Service Enterprise Group, Inc., Southern Company, and Tennessee Valley Authority.

[152] World Institute for Nuclear Security (WINS), *Advancing Gender Equality, Diversity and Inclusion in Nuclear Security: Self-Assessment, Evaluation and Action Plan Tool* (Vienna: WINS, 2022), https://www.wins.org/document/self-assessment-and-evaluation-tool-on-gender-equality-diversity-and-inclusion-2/.

[153] WINS, *Advancing Gender Equality, Diversity and Inclusion in Nuclear Security: Reporting Framework,* (Vienna: WINS, 2023), https://www.wins.org/document/reporting-framework-for-gender-equality-diversity-and-inclusion/.

[154] Interview with senior government leader, May 23, 2023.

[155] Interview with senior nuclear facility executive, May 19, 2023.

[156] Risa Brooks, "How the Anti-Woke Campaign Against the U.S. Military Damages National Security," *War on the Rocks,* April 7, 2023, https://warontherocks.com/2023/04/how-the-anti-woke-campaign-against-the-u-s-military-damages-national-security/.

[157] Karoun Demirjian, "Senate Passes Bipartisan Defense Bill, Setting Up a Clash with the House," *The New York Times,* July 28, 2023, https://www.nytimes.com/2023/07/27/us/politics/senate-passes-bipartisan-defense-bill.html.

[158] Nair, *Converging Goals,* 12.

[159] Karl Dewey, George Foster, Christopher Hobbs, and Daniel Salisbury, *Nuclear Security Culture in Practice: A Handbook of UK Case Studies* (London: Kings College London, 2021), 11, https://www.kcl.ac.uk/csss/assets/nuclear-security-culture-in-practice-2021.pdf; IAEA, "Nuclear Security Culture," 37.

[160] Edgar H. Schein, "How Culture Forms, Develops and Changes," in Kilmann, R.H., Saxton, M.J., Serpa, R. (eds.) *Gaining Control of the Corporate Culture* (San Francisco, CA: Jossey-Bass, 1985); David Burkus, "How to Tell if Your Company Has a Creative Culture," *Harvard Business Review* (December 2, 2014), https://hbr.org/2014/12/how-to-tell-if-your-company-has-a-creative-culture#:~:text=Schein%20divided%20an%20organization's%20culture,artifacts%2C%20values%2C%20and%20assumptions; Katherine Mack et al., "Gender Undone: Confronting Bias in the Nuclear Field," *International Journal of Nuclear Security* (forthcoming).

[161] Schein, "How Culture Forms, Develops and Changes"; Mack et al., "Gender Undone."

[162] Burkus, "How to Tell if Your Company Has a Creative Culture"; Mack et al., "Gender Undone."

[163] Edgar H. Schein, *Organizational Culture and Leadership* (San Francisco: Jossey-Bass, 2004), http://www.untag-smd.ac.id/files/Perpustakaan_Digital_2/ORGANIZATIONAL%20CULTURE%20Organizational%20Culture%20and%20Leadership,%203rd%20Edition.pdf.

[164] Burkus, "How to Tell if Your Company Has a Creative Culture;" Mack et al., "Gender Undone."

[165] Michael Couch, "It's More Than the Numbers: Organizational Culture and Diversity, Equity and Inclusion," *Forbes* (April 28, 2021), https://www.forbes.com/sites/forbescoachescouncil/2021/04/28/its-more-than-the-numbers-organizational-culture-and-diversity-equity-and-inclusion/?sh=3e618b87340b; WINS, *Advancing Gender Equality, Diversity and Inclusion in Nuclear Security*, 1.

[166] IAEA, "Nuclear Security Culture," 1-2.

[167] Mack et al., "Gender Undone: Confronting Bias in the Nuclear Field."

[168] Mack et al., "Gender Undone: Confronting Bias in the Nuclear Field."

[169] These assumptions have been extrapolated from related work by Mack et al., "Gender Undone: Confronting Bias in the Nuclear Field."

[170] Mack et al., "Gender Undone: Confronting Bias in the Nuclear Field"; IAEA, "Nuclear Security Culture."

[171] IAEA, "Nuclear Security Culture," 7; Nair and Roth, *Building a Diverse, Equitable, and Inclusive Nuclear Security Culture,* 8.

[172] Jenkins, "Redefining Our Concept of Security."

[173] Interview with intelligence and security specialist, July 12, 2023.

[174] Sundiatu Dixon-Fyle, Kevin Dolan, Dame Vivian Hunt, and Sara Prince, "Diversity Wins: How Inclusion Matters," McKinsey & Company, May 19, 2020, https://www.mckinsey.com/featured-insights/diversity-and-inclusion/diversity-wins-how-inclusion-matters#/.

[175] IAEA, "Nuclear Security Culture," 9.

[176] Nair and Roth, *Building a Diverse, Equitable, and Inclusive Nuclear Security Culture,* 7-8.

[177] Nair and Roth, *Building a Diverse, Equitable, and Inclusive Nuclear Security Culture,* 7-8.

[178] Nair and Roth, *Building a Diverse, Equitable, and Inclusive Nuclear Security Culture,* 7-8.

[179] Nair and Roth, *Building a Diverse, Equitable, and Inclusive Nuclear Security Culture,* 7-8.

[180] Piquado et al., "Assessing the Potential for Racial Bias in the Security Clearance Process," 11-14.

[181] Nair and Roth, *Building a Diverse, Equitable, and Inclusive Nuclear Security Culture,* 7-8.

[182] Nair and Roth, *Building a Diverse, Equitable, and Inclusive Nuclear Security Culture,* 7-8.

[183] Piquado et al., "Assessing the Potential for Racial Bias in the Security Clearance Process," 11-14.

[184] IAEA, "Nuclear Security Culture," 8.

[185] Nair and Roth, *Building a Diverse, Equitable, and Inclusive Nuclear Security Culture,* 7-8.

[186] U.S. Government Accountability Office, *DOD Civilian Workforce: Actions Needed to Analyze and Eliminate Barriers to Diversity,* GAO-23-105284 (Washington, D.C.: GAO, 2023), 57, https://www.gao.gov/assets/gao-23-105284.pdf.

[187] Nair and Roth, *Building a Diverse, Equitable, and Inclusive Nuclear Security Culture,* 7-8.

[188] Using the WINS *Reporting Framework for Gender Equality, Diversity, and Inclusion,* organizations can develop their "Plan, Prepare, Publish, Promote cycle," which provides the main reporting principles and components.

[189] GAO, *DOD Civilian Workforce: Actions Needed to Analyze and Eliminate Barriers to Diversity,* 56-57.

[190] Workshop on DEI with civil society security experts, March 20, 2023.

[191] Nair and Roth, *Building a Diverse, Equitable, and Inclusive Nuclear Security Culture,* 7-8.

[192] Interview with organizational culture consultant, July 14, 2023.

[193] Nair and Roth, *Building a Diverse, Equitable, and Inclusive Nuclear Security Culture,* 7-8.

[194] U.S. Government Accountability Office, *Nuclear Security: DOE Should Take Actions,* 35.

[195] GAO, *Nuclear Security: DOE Should Take Actions,* 36

[196] Piquado et al., "Assessing the Potential for Racial Bias in the Security Clearance Process," 11-14.

[197] Piquado et al., "Assessing the Potential for Racial Bias in the Security Clearance Process," 11-14.

[198] Interview with organizational culture consultant, July 14, 2023.

[199] Nair and Roth, *Building a Diverse, Equitable, and Inclusive Nuclear Security Culture,* 7-8.

[200] Nair and Roth, *Building a Diverse, Equitable, and Inclusive Nuclear Security Culture,* 7-8.

[201] U.S. Nuclear Regulatory Commission (NRC), Safety and Security — *Policy and Oversight,* by D. Sieracki and C. Thompson, Open-file report IAEA-CN-254-258 (Washington, D.C.: NRC, 2017), https://www.nrc.gov/docs/ML1724/ML17248A421.pdf; Union of Concerned Scientists, "Nuclear Plant Security," last modified February 25, 2016, https://www.ucsusa.org/resources/nuclear-plant-security.

[202] Interview with organizational culture consultant, July 14, 2023.

[203] Nair and Roth, *Building a Diverse, Equitable, and Inclusive Nuclear Security Culture,* 7-8.

[204] Nair and Roth, *Building a Diverse, Equitable, and Inclusive Nuclear Security Culture,* 7-8.

[205] WINS, *Advancing Gender Equality, Diversity and Inclusion in Nuclear Security: Reporting Framework for Gender Equality, Diversity and Inclusion* (Vienna: July 19, 2023), 1, https://www.wins.org/document/reporting-framework-for-gender-equality-diversity-and-inclusion/.

[206] IAEA, "Nuclear Security Culture," 12.

[207] WINS, "1.4 Nuclear Security Culture," in WINS International Best Practice Guide, Rev. 3.0 (Vienna: April 2019), 6, 9, https://www.wins.org/document/1-4-nuclear-security-culture/.

[208] Nair and Roth, *Building a Diverse, Equitable, and Inclusive Nuclear Security Culture,* 7-8.

[209] Workshop on DEI with civil society security experts, March 20, 2023.

[210] WINS, "1.4 Nuclear Security Culture," 7, 15.

[211] Nair and Roth, *Building a Diverse, Equitable, and Inclusive Nuclear Security Culture,* 7-8.

[212] Nair and Roth, *Building a Diverse, Equitable, and Inclusive Nuclear Security Culture,* 7-8.

[213] Workshop on DEI with civil society security experts, March 20, 2023.

[214] Workshop on DEI with industry security experts, June 1, 2023.

[215] WINS, "1.4 Nuclear Security Culture," 4.

[216] WINS, "1.4 Nuclear Security Culture," 5.

[217] Nair and Roth, *Building a Diverse, Equitable, and Inclusive Nuclear Security Culture,* 8; Dolly Chugh, *The Person You Mean to Be: How Good People Fight Bias* (New York: Harper Business, 2018), 35-36.

[218] Nair and Roth, *Building a Diverse, Equitable, and Inclusive Nuclear Security Culture,* 7-8.

[219] Interview with organizational culture consultant, July 14, 2023.

[220] Interview with organizational culture consultant, July 14, 2023.

[221] Interview with organizational culture consultant, July 14, 2023.

[222] Interview with organizational culture consultant, July 14, 2023.

[223] Interview with organizational culture consultant, July 14, 2023.

[224] Nair and Roth, *Building a Diverse, Equitable, and Inclusive Nuclear Security Culture,* 7-8.

[225] Nair and Roth, *Building a Diverse, Equitable, and Inclusive Nuclear Security Culture,* 7-8.

[226] Nair and Roth, *Building a Diverse, Equitable, and Inclusive Nuclear Security Culture,* 7-8.

[227] WINS, *Advancing Gender Equality, Diversity and Inclusion in Nuclear Security,* 1; Nair, *Converging Goals,* 6; Nair and Roth, *Building a Diverse, Equitable, and Inclusive Nuclear Security Culture,* 7-8.

[228] WINS, *Reporting Framework for Gender Equality, Diversity and Inclusion,* 1.

[229] WINS, *Advancing Gender Parity in Nuclear Security* (Vienna: WINS, 2021), 8-12, https://www.wins.org/document/advancing-gender-parity-in-nuclear-security/; Nair, *Converging Goals;* Nair and Roth, B*uilding a Diverse, Equitable, and Inclusive Nuclear Security Culture,* 7-8.

[230] Gender Champions in Nuclear Policy, "About," accessed August 24, 2023, https://gcnuclearpolicy.org/about/; Gender Champions in Nuclear Policy, "Panel Pledge," accessed August 24, 2023, https://gcnuclearpolicy.org/about/panel-pledge/; Nair and Roth, *Building a Diverse, Equitable, and Inclusive Nuclear Security Culture,* 7-8.

[231] Women of Color Advancing Peace, Security & Conflict Transformation, "Vision and Mission," accessed August 24, 2023, https://www.wcaps.org/mission; OrgsinSolidarity, "Home," accessed August 24, 2023, https://orgsinsolidarity.org/; Sylvia Mishra and Wardah Amir, *Racial Inequalities and Nuclear Policy* (Muscatine: Stanley Center, 2022), https://stanleycenter.org/wp-content/uploads/2022/02/CRNW-SPC21-AB-2-1-22.pdf; Nair and Roth, *Building a Diverse, Equitable, and Inclusive Nuclear Security Culture,* 7-8.

[232] Out in National Security, "Home," accessed August 24, 2023, https://www.outinnationalsecurity.org/; Vienna Center for Disarmament and NonProliferation, *LGBT+ Identity in the Nuclear Weapons Space* (Vienna: VCDNP, 2022), https://vcdnp.org/lgbt-identity-in-nuclear-weapons-space/; Nair and Roth, *Building a Diverse, Equitable, and Inclusive Nuclear Security Culture,* 7-8.

[233] Diversity in National Security Network, "About," accessed August 24, 2023, https://www.dinsn.com/about.

[234] IAEA, "Nuclear Security Culture," 15.

[235] IAEA, "Nuclear Security Culture," 5.

[236] Interview with industry executive, April 20, 2023; Workshop on DEI with industry security experts, June 1, 2023; Workshop on DVE with industry security experts, June 1, 2023; Interview with nuclear industry security expert, June 23, 2023.

The Stimson Center promotes international security and shared prosperity through applied research and independent analysis, global engagement, and policy innovation.

STIMSON.ORG

STIMSON

INNOVATIVE IDEAS CHANGING THE WORLD