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NPS in the News Weekly Media Report - December 7-13, 2021

Naval Postgraduate School (U.S.)

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NPS IN THE NEWS

Weekly Media Report – December 7-13, 2021

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NASA:

[Two Arizona Women Selected to Train as New NASA Astronaut Recruits](#)

(AZ Family 6 Dec 21) ... Alexis Cortez

(iHeart 7 Dec 21) ... Ginny Reese

Birch is a native of Gilbert and studied at the University of Arizona in Tucson. She now joins a class of ten new NASA astronaut recruits to begin training for future missions... Like Birch, Wittner is also a University of Arizona graduate. Wittner grew up in California and served as a lieutenant commander with the U.S. Navy. She received a bachelor of science in aerospace engineering at UArizona and a master of science from the U.S. Naval Postgraduate School. She has flown with several strike fighter squadrons in Virginia and California.

[NASA Selects New Astronaut Recruits to Train for Future Missions](#)

(PRNewswire 6 Dec 21)

(SciTechDaily 7 Dec 21)

(SpaceRef 6 Dec 21)

(WPR 6 Dec 21) ... Bill Chappell

(Houston Public Media 6 Dec 21)

(Houston Chronicle 6 Dec 21)

(WFTV 6 Dec 21)

NASA has chosen 10 new astronaut candidates from a field of more than 12,000 applicants to represent the United States and work for humanity's benefit in space... **Luke Delaney**, 42, major, retired, U.S. Marine Corps, grew up in Debary, Florida. He holds a degree in mechanical engineering from University of North Florida and a master's degree in aerospace engineering from the **Naval Postgraduate School**.

[NASA: Meet the 10 New Astronaut Candidates for Future Space Missions](#)

(siLive 8 Dec 21) ... Annalise Knudson

NASA has announced it chose 10 new astronaut candidates from a field of more than 12,000 applicants to represent the United States and work in future space missions... Jessica Wittner, 38, lieutenant commander, U.S. Navy, is a native of California with a distinguished career serving on active duty as a naval aviator and test pilot. She holds a Bachelor of Science in aerospace engineering from the University of Arizona, and a Master of Science in aerospace engineering from the U.S. Naval Postgraduate School. Wittner was commissioned as a naval officer through an enlisted-to-officer program and has served operationally flying F/A-18 fighter jets with Strike Fighter Squadron 34 in Virginia Beach, Virginia, and Strike Fighter Squadron 151 in Lemoore, California. A graduate of U.S. Naval Test Pilot School, she also worked as a test pilot and project officer with Air Test and Evaluation Squadron 31 in China Lake, California.

[Clovis woman named to NASA's newest class of astronauts](#)

(The Sun 7 Dec 21) ... Reid Stone

With NASA launching its first class of astronaut candidates in four years, the San Joaquin Valley has something to cheer about: a native daughter potentially heading to space... Wittner, an alumni of Buchanan High School and

Clovis native, is a naval aviator. She is an alumni of the University of Arizona, graduating with a bachelor's degree in aerospace engineering. She received a master's on the subject from the U.S. **Naval Postgraduate School** in Monterey.

University of North Florida Alumnus Chosen as One of 10 New NASA Astronaut Candidates

(WOKV 8 Dec 21) ... Lucia Viti

(Gazette Journal 8 Dec 21) ... Sherry Hamilton

University of North Florida alumnus and U.S. Marine Corps Maj. (retired.), Luke Delaney has been chosen by NASA to join the first new astronaut class in four years.

As one of 10 chosen among a field of more than 12,000 applicants across the U.S., the 42-year old Florida native received his bachelor's in mechanical engineering from UNF. The DeBary High School graduate also received a Masters Degree in Aerospace Engineering from the **Naval Postgraduate School**.

RESEARCH:

NPS' Modeling, Virtual Reality Center Reimagines Navy Training

(Navy.mil 8 Dec 21) ... Rebecca Hoag

(NPS.edu 8 Dec 21) ... Rebecca Hoag

(MilitarySpot 9 Dec 21) ... Rebecca Hoag

NPS students in Research Associate Christian Fitzpatrick's Simulation Interoperability Practicum view a simulation and guest presentation in one of the MOVES Institute's laboratories in Watkins Hall. Fitzpatrick's research exploring the integration of live, virtual and constructive simulations together is one of several MOVES efforts advancing the efficacy of training via simulation in the Navy and DOD.

NPS Researchers Use High-Tech Optics, Artificial Intelligence to Advance Laser Weapons Systems

(NPS.edu 13 Dec 21) ... Rebecca Hoag

(Navy.mil 13 Dec 21) ... Rebecca Hoag

A high-energy laser beam pointed over the ocean will get distorted by the atmosphere and marine layer, reducing its effectiveness in long-range defensive applications, particularly when the target is at a low elevation.

NPS Gains Access to Joint Information Operations Range

(NPS.edu 13 Dec 21) ... Mass Communication Specialist 2nd Class James Norket

(Navy.mil 13 Dec 21) ... Mass Communication Specialist 2nd Class James Norket

The Naval Postgraduate School (NPS) has added a new capability to the university's technological toolbelt with a node connecting NPS to the Joint Information Operations Range (JIOR). This advanced capability provides NPS faculty and students with access to a globally-distributed, closed-loop, live-fire cyber range complex that integrates users and capability providers to enable classified training, testing and experimentation.

Parents of Parkland Victim Urge Biden to Act on Gun Control

(Al Jazeera 10 Dec 21) ... Ali Harb

When a gunman killed four students at a high school in Michigan last week, the tragedy not only invoked painful memories for Patricia and Manuel "Manny" Oliver, it pushed the couple to renew their call for action... There were 31 school shootings in the year following the Parkland incident, according to a CNN report, while a database by the **Naval Postgraduate School** Center for Homeland Defense and Security has documented hundreds of gun-related incidents on school grounds since 2018.

Changing Hearts and Brains: SOF Must Prepare Now for Neurowarfare

(Small Wars Journal 12 Dec 21) ... Dr. Shannon Houck, Col. John Crisafulli, Lt. Col. Joshua Gramm, Maj. Brian Branagan

The timeworn "changing hearts and minds" idiom may soon take on a more literal meaning as we confront the weaponization of neurotechnology. In December 2016, CIA officers and American and Canadian diplomats stationed in Havana, Cuba reported hearing pulsing sounds, sometimes accompanied by pressure sensations in their heads. Neurological symptoms followed – symptoms like headaches, dizziness, cognitive difficulties, fatigue, and

hearing and vision loss. Over 40 U.S. government employees were affected; 24 were diagnosed with brain damage. These were not isolated incidents. Similar reports have emerged from U.S. personnel in China, Russia, Uzbekistan, and CIA officers working in several different countries. Two separate cases in the Washington D.C. area are currently under investigation after U.S. officials suffered from the same sudden symptoms, one occurring in an Arlington suburb in 2019, and the other in the oval lawn of the White House in 2020. Most recently, media reports from April 2021 indicate that DoD officials briefed the Armed Service Committee, stating they are “increasingly concerned about the vulnerability of U.S. troops in places such as Syria, Afghanistan, and various countries in South America.” ... Longer-term, it will be critical to develop ‘Neuro SOF’ professionals who remain at the cutting edge of the neuroscience of war. **Naval Postgraduate School**, for example, is perfectly positioned to serve as the critical nexus between the strategic and operational challenges of neurowarfare.

FACULTY:

NPS Professor to Compete on Jeopardy! Tonight

(*California News Times* 8 Dec 21)

(*KSBW* 8 Dec 21)

Professors of Monterey are competing in Jeopardy! Tonight, Sam Batley is an associate professor of operations research at the **Naval Postgraduate School** and one of the 15 professors in the first ever professor tournament. They are competing for the \$ 100,000 grand prize and champion tournament spots... An old Jeopardy with 400,000 fans! There is a website that summarizes the questions. Currently, they are not reusing the question, but by reading the old question, you can feel what they are trying to emphasize. Tonight's KSBW8 7:00 pm episode.

'Jeopardy!' Viewers Spot a Steve Martin dopplegänger on the Show

(*Yahoo!* 9 Dec 21) ... George Back

One of the contestants on Wednesday's Jeopardy! had viewers wondering if Steve Martin had somehow snuck onto the game show. Sam Buttrey, an associate professor of operations research at the **Naval Postgraduate School** in Monterey, Calif., bore an uncanny resemblance to the legendary comedic actor.

'Jeopardy!' Viewers Obsess Over Steve Martin Doppelganger Contestant

(*PopCulture* 9 Dec 21) ... Stephen Andrews

(*TVInsider* 9 Dec 21) ... Martin Holmes

Jeopardy! viewers have been obsessed over a recent contestant who many think is a perfect doppelganger for legendary comedian and actor Steve Martin. On Wednesday's episode, Sam Buttrey — an associate professor of operations research at the **Naval Postgraduate School** in Monterey, California — went head-to-head-to-head with two other payers on the iconic quiz show. Almost immediately, Jeopardy! fans began taking to social media to comment on how Buttrey bears an uncanny resemblance to Martin.

FACULTY BOOK AWARD:

Global Jihad: A Brief History Named a 2021 Best Book of the Year by Foreign Policy and Foreign Affairs.

(*Stanford University Press* 12 Dec 21) ... Stephen Andrews

Most violent jihadi movements in the twentieth century focused on removing corrupt, repressive secular regimes throughout the Muslim world. But following the 1979 Soviet invasion of Afghanistan, a new form of jihadism emerged—global jihad—turning to the international arena as the primary locus of ideology and action. With this book, Glenn E. Robinson develops a compelling and provocative argument about this violent political movement's evolution... Glenn E. Robinson is on the faculty at the **Naval Postgraduate School** in Monterey, California, and is affiliated with the Center for Middle Eastern Studies at the University of California, Berkeley. He has served as an expert advisor to USAID and the US Department of Defense.

ALUMNI:

Parkway West Graduate is Now Commanding Officer of USS Oakland

(*Fox2Now* 7 Dec 21) ... Monica Ryan

A 1999 Parkway West High School graduate is now the commanding officer of USS Oakland (LCS 24) Blue Crew... Jaskowiak graduated from the United States Naval Academy in 2003 with a Bachelor's Degree in Systems

Engineering. While attending school, he was the starting left tackle on the football team. He earned a Master's of Science degree in Systems Technology from the **Naval Postgraduate School** in 2004.

UPCOMING NEWS & EVENTS:

December 17: [Fall Quarter Graduation](#) (with commencement speaker [Lieutenant General Eric P. Wendt](#))

December 25: Christmas Day (Federal Holiday – December 24)

December 26: International Report Date

December 27: Reporting Date

January 1: New Years Day (Federal Holiday - December 31)

NASA:

Two Arizona Women Selected to Train as New NASA Astronaut Recruits

(AZ Family 6 Dec 21) ... Alexis Cortez

(iHeart 7 Dec 21) ... Ginny Reese

Birch is a native of Gilbert and studied at the University of Arizona in Tucson. She now joins a class of ten new NASA astronaut recruits to begin training for future missions.

Two women with Arizona ties have been selected from a pool of more than 12,000 applicants to become new astronaut recruits with NASA.

Thirty-five-year-old Christina Birch and 38-year-old Jessica Wittner were chosen on Monday afternoon at NASA's Johnson Space Center to train for future NASA missions, along with eight other candidates. Birch and Wittner join the first new astronaut class in four years.

"The fact that this is actually happening – I got to put on a blue flight suit, this is really just a dream," Birch said.

Birch is a native of Gilbert and studied at the University of Arizona in Tucson. She graduated with two bachelor's degrees, one in mathematics and the second in biochemistry and molecular biophysics. Birch then went on to receive her doctorate in biological engineering from MIT.

"I started to realize that what I was doing in the lab mimicked some of the experiments that I saw happening on the ISS," she said.

To add to her impressive resume, Birch is a decorated track cyclist with the U.S. National team.

"I cannot wait to start training. I really like training for big goals – that's something I'm used to with cycling," she said.

Astronaut back in Arizona after making history on Space X mission

While she hopes her journey inspires little girls and boys who one day hope to go to space, she also had a message for those her age.

Like Birch, Wittner is also a University of Arizona graduate. Wittner grew up in California and served as a lieutenant commander with the U.S. Navy. She received a bachelor of science in aerospace engineering at UArizona and a master of science from the U.S. **Naval Postgraduate School**. She has flown with several strike fighter squadrons in Virginia and California.

"I'm humbled that they chose me to be part of this class," Wittner said.

The two women join their colleagues as future NASA astronauts, eager to use their experience and knowledge to explore space. The astronauts will report for duty beginning next month to start their two years of training. The training includes operating and maintaining the International Space Station's system, spacewalks, complex robotics skills, operate a T-38 training jet and learning Russian.

"Today, we welcome 10 new explorers, 10 members of the Artemis generation, NASA's 2021 astronaut candidate class," NASA Administrator Bill Nelson said. "Alone, each candidate has 'the right stuff,' but together they represent the creed of our country: E pluribus unum – out of many, one."

[Two Arizona women selected to train as new NASA astronaut recruits | Arizona News | azfamily.com](#)

[FM 102.5 KDON | The Central Coast's #1 Hit Music Station \(iheart.com\)](#)

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NASA Selects New Astronaut Recruits to Train for Future Missions

(PRNewswire 6 Dec 21)

(SciTechDaily 7 Dec 21)

(SpaceRef 6 Dec 21)

(WPR 6 Dec 21) ... Bill Chappell

(Houston Public Media 6 Dec 21)

(Houston Chronicle 6 Dec 21)

(WFTV 6 Dec 21)

NASA has chosen 10 new astronaut candidates from a field of more than 12,000 applicants to represent the United States and work for humanity's benefit in space.

NASA Administrator Bill Nelson introduced the members of the 2021 astronaut class, the first new class in four years, during a Dec. 6 event at Ellington Field near NASA's Johnson Space Center in Houston.

"Today we welcome 10 new explorers, 10 members of the Artemis generation, NASA's 2021 astronaut candidate class," Nelson said. "Alone, each candidate has 'the right stuff,' but together they represent the creed of our country: E pluribus unum – out of many, one."

The astronaut candidates will report for duty at Johnson in January 2022 to begin two years of training. Astronaut candidate training falls into five major categories: operating and maintaining the International Space Station's complex systems, training for spacewalks, developing complex robotics skills, safely operating a T-38 training jet, and Russian language skills.

Upon completion, they could be assigned to missions that involve performing research aboard the space station, launching from American soil on spacecraft built by commercial companies, as well as deep space missions to destinations including the Moon on NASA's Orion spacecraft and Space Launch System rocket.

"Each of you has amazing backgrounds," Pam Melroy, former NASA astronaut and NASA's deputy administrator, told the candidates. "You bring diversity in so many forms to our astronaut corps and you stepped up to one of the highest and most exciting forms of public service."

Applicants included U.S. citizens from all 50 states, the District of Columbia, and U.S. territories Puerto Rico, Guam, the Virgin Islands, and Northern Mariana Islands. For the first time ever, NASA required candidates to hold a master's degree in a STEM field and used an online assessment tool. The women and men selected for the new astronaut class represent the diversity of America and the career paths that can lead to a place in America's astronaut corps.

The 2021 astronaut candidates are:

Nichole Ayers, 32, major, U.S. Air Force, is a native of Colorado who graduated from the U.S. Air Force Academy in Colorado Springs, Colorado, in 2011 with a bachelor's degree in mathematics with a minor in Russian. She later earned a master's degree in computational and applied mathematics from Rice University. Ayers is an experienced combat aviator with more than 200 combat hours and more than 1,150 hours of total flight time in the T-38 and the F-22 Raptor fighter jet. One of the few women currently flying the F-22, in 2019 Ayers led the first ever all-woman formation of the aircraft in combat.

Marcos Berrios, 37, major, U.S. Air Force, grew up in Guaynabo, Puerto Rico. While a reservist in the Air National Guard, Berrios worked as an aerospace engineer for the U.S. Army Aviation Development Directorate at Moffett Federal Airfield in California. He is a test pilot who holds a bachelor's degree in mechanical engineering from the Massachusetts Institute of Technology and a master's degree in mechanical engineering as well as a doctorate in aeronautics and astronautics from Stanford University. A distinguished pilot, Berrios has accumulated more than 110 combat missions and 1,300 hours of flight time in more than 21 different aircraft.

Christina Birch, 35, grew up in Gilbert, Arizona, and graduated from the University of Arizona with a bachelor's degree in mathematics and a bachelor's degree in biochemistry and molecular biophysics. After earning a doctorate in biological engineering from MIT, she taught bioengineering at the University of California, Riverside, and scientific writing and communication at the California Institute of Technology. She became a decorated track cyclist on the U.S. National Team.

Deniz Burnham, 36, lieutenant, U.S. Navy, calls Wasilla, Alaska home. A former intern at NASA's Ames Research Center in Silicon Valley, California, Burnham serves in the U.S. Navy Reserves. She earned a bachelor's degree in chemical engineering from the University of California, San Diego, and a master's degree in mechanical engineering from the University of Southern California in Los Angeles.



Burnham is an experienced leader in the energy industry, managing onsite drilling projects throughout North America, including in Alaska, Canada, and Texas.

Luke Delaney, 42, major, retired, U.S. Marine Corps, grew up in Debary, Florida. He holds a degree in mechanical engineering from University of North Florida and a master's degree in aerospace engineering from the **Naval Postgraduate School**. He is a distinguished naval aviator who participated in exercises throughout the Asia Pacific region and conducted combat missions in support of Operation Enduring Freedom. As a test pilot, he executed numerous flights evaluating weapon systems integration, and he served as a test pilot instructor. Delaney most recently worked as a research pilot at NASA's Langley Research Center, in Hampton, Virginia, where he supported airborne science missions. Including his NASA career, Delaney logged more than 3,700 flight hours on 48 models of jet, propeller, and rotary wing aircraft.

Andre Douglas, 35, is a Virginia native. He earned a bachelor's degree in mechanical engineering from the U.S. Coast Guard Academy, a master's degree in mechanical engineering from the University of Michigan, a master's degree in naval architecture and marine engineering from the University of Michigan, a master's degree in electrical and computer engineering from Johns Hopkins University, and a doctorate in systems engineering from the George Washington University. Douglas served in the U.S. Coast Guard as a naval architect, salvage engineer, damage control assistant, and officer of the deck. He most recently was a senior staff member at the Johns Hopkins University Applied Physics Lab, working on maritime robotics, planetary defense, and space exploration missions for NASA.

Jack Hathaway, 39, commander, U.S. Navy, is a native of Connecticut. He earned bachelors' degrees in physics and history from the U.S. Naval Academy and completed graduate studies at Cranfield University in England and the U.S. Naval War College. A distinguished naval aviator, Hathaway flew and deployed with Navy's Strike Fighter Squadron 14 aboard the USS Nimitz and Strike Fighter Squadron 136 aboard the USS Truman. He graduated from Empire Test Pilots' School, supported the Joint Chiefs of Staff at the Pentagon, and was most recently assigned as the prospective executive officer for Strike Fighter Squadron 81. He has more than 2,500 flight hours in 30 types of aircraft, more than 500 carrier arrested landings, and flew 39 combat missions.

Anil Menon, 45, lieutenant colonel, U.S. Air Force, was born and raised in Minneapolis, Minnesota. He was SpaceX's first flight surgeon, helping to launch the company's first humans to space during NASA's SpaceX Demo-2 mission and building a medical organization to support the human system during future missions. Prior to that, he served NASA as the crew flight surgeon for various expeditions taking astronauts to the International Space Station. Menon is an actively practicing emergency medicine physician with fellowship training in wilderness and aerospace medicine. As a physician, he was a first responder during the 2010 earthquake in Haiti, 2015 earthquake in Nepal, and the 2011 Reno Air Show accident. In the Air Force, Menon supported the 45th Space Wing as a flight surgeon and the 173rd Fighter Wing, where he logged over 100 sorties in the F-15 fighter jet and transported over 100 patients as part of the critical care air transport team.

Christopher Williams, 38, grew up in Potomac, Maryland. He graduated from Stanford University in 2005 with a bachelor's degree in physics and a doctorate in physics from MIT in 2012, where his research was in astrophysics. Williams is a board-certified medical physicist, completing his residency training at Harvard Medical School before joining the faculty as a clinical physicist and researcher. He most recently worked as a medical physicist in the Radiation Oncology Department at the Brigham and Women's Hospital and Dana-Farber Cancer Institute in Boston. He was the lead physicist for the Institute's MRI-guided adaptive radiation therapy program. His research focused on developing image guidance techniques for cancer treatments.

Jessica Wittner, 38, lieutenant commander, U.S. Navy, is a native of California with a distinguished career serving on active duty as a naval aviator and test pilot. She holds a Bachelor of Science in aerospace engineering from the University of Arizona, and a Master of Science in aerospace engineering from the U.S. Naval Postgraduate School. Wittner was commissioned as a naval officer through an enlisted-to-officer program and has served operationally flying F/A-18 fighter jets with Strike Fighter Squadron 34 in Virginia Beach, Virginia, and Strike Fighter Squadron 151 in Lemoore, California. A graduate of U.S. Naval Test Pilot School, she also worked as a test pilot and project officer with Air Test and Evaluation Squadron 31 in China Lake, California.

With the addition of these 10 members of the 2021 astronaut candidate class, NASA now has selected 360 astronauts since the original Mercury Seven in 1959.

"We've made many giant leaps throughout the last 60 years, fulfilling President Kennedy's goal of landing a man on the moon," said Johnson center Director Vanessa Wyche. "Today we reach further into the stars as we push forward to the Moon once again and on to Mars with NASA's newest astronaut candidate class."

[NASA Selects New Astronaut Recruits to Train for Future Missions \(prnewswire.com\)](#)

[Meet the 10 New NASA Astronaut Recruits Selected From More Than 12,000 Applicants \(scitechdaily.com\)](#)

[NASA Selects New Astronaut Recruits to Train for Future Missions \(spaceref.com\)](#)

[NASA names 2021 astronaut candidates as it plans for moon missions | Wisconsin Public Radio \(wpr.org\)](#)

[NASA names 2021 astronaut candidates as it plans for moon missions – Houston Public Media](#)

[NASA announces 10 new astronaut candidates out of more than 12,000 applications \(houstonchronicle.com\)](#)

[NASA announces astronaut candidate class for 2021 – WFTV](#)

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NASA: Meet the 10 New Astronaut Candidates for Future Space Missions

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NASA has announced it chose 10 new astronaut candidates from a field of more than 12,000 applicants to represent the United States and work in future space missions.

NASA Administrator Bill Nelson introduced the members of the 2021 astronaut class, the first new class in four years, on Monday.

"Today we welcome 10 new explorers, 10 members of the Artemis generation, NASA's 2021 astronaut candidate class," Nelson said. "Alone, each candidate has 'the right stuff,' but together they represent the creed of our country: E pluribus unum — out of many, one."

The candidates will report for duty at NASA's Johnson Space Center in Houston, Texas, in January 2022 to begin two years of training, which falls into five major categories: operating and maintaining the International Space Station's complex systems; learning about spacewalks; developing complex robotics skills; safely operating a T-38 training jet; Russian language skills.

Upon completion, the astronaut candidates could be assigned to missions that involve performing research abroad the space station, launching from American soil on spacecraft built by commercial companies, as well as deep space missions to destinations including the moon on NASA's Orion spacecraft and Space Launch System rocket.

Applicants included U.S. citizens from all 50 states, the District of Columbia, and U.S. territories Puerto Rico, Guam, the Virgin Islands and Northern Mariana Islands. And for the first time ever, NASA required candidates to hold a master's degree in a STEM (science, technology, engineering, math) field and used an online assessment tool.

The women and men selected for the new astronaut class represent the diversity of America and the career paths that can lead to a place in America's astronaut corps, according to NASA. With the addition

of these 10 members of the 2021 astronaut candidate class, NASA has now selected 360 astronauts since the original Mercury Seven in 1959.

“We’ve made many giant leaps throughout the last 60 years, fulfilling President Kennedy’s goal of landing a man on the moon,” said Johnson center Director Vanessa Wyche. “Today we reach further into the stars as we push forward to the Moon once again and on to Mars with NASA’s newest astronaut candidate class.”

Here are the 10 new astronaut candidates:

NICHOLE AYERS

Nichole Ayers, 32, major, U.S. Air Force, is a native of Colorado who graduated from the U.S. Air Force Academy in Colorado Springs, Colorado, in 2011 with a bachelor’s degree in mathematics with a minor in Russian. She later earned a master’s degree in computational and applied mathematics from Rice University. Ayers is an experienced combat aviator with more than 200 combat hours and more than 1,150 hours of total flight time in the T-38 and the F-22 Raptor fighter jet. One of the few women currently flying the F-22, in 2019 Ayers led the first ever all-woman formation of the aircraft in combat.

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Marcos Berrios, 37, major, U.S. Air Force, grew up in Guaynabo, Puerto Rico. While a reservist in the Air National Guard, Berrios worked as an aerospace engineer for the U.S. Army Aviation Development Directorate at Moffett Federal Airfield in California. He is a test pilot who holds a bachelor’s degree in mechanical engineering from the Massachusetts Institute of Technology and a master’s degree in mechanical engineering as well as a doctorate in aeronautics and astronautics from Stanford University. A distinguished pilot, Berrios has accumulated more than 110 combat missions and 1,300 hours of flight time in more than 21 different aircraft.

CHRISTINA BIRCH

Christina Birch, 35, grew up in Gilbert, Arizona, and graduated from the University of Arizona with a bachelor’s degree in mathematics and a bachelor’s degree in biochemistry and molecular biophysics. After earning a doctorate in biological engineering from MIT, she taught bioengineering at the University of California, Riverside, and scientific writing and communication at the California Institute of Technology. She became a decorated track cyclist on the U.S. National Team.

DENIZ BURNHAM

Deniz Burnham, 36, lieutenant, U.S. Navy, calls Wasilla, Alaska, home. A former intern at NASA’s Ames Research Center in Silicon Valley, California, Burnham serves in the U.S. Navy Reserves. She earned a bachelor’s degree in chemical engineering from the University of California, San Diego, and a master’s degree in mechanical engineering from the University of Southern California in Los Angeles. Burnham is an experienced leader in the energy industry, managing onsite drilling projects throughout North America, including in Alaska, Canada, and Texas.

LUKE DELANEY

Luke Delaney, 42, major, retired, U.S. Marine Corps, grew up in Debary, Florida. He holds a degree in mechanical engineering from University of North Florida and a master’s degree in aerospace engineering from the **Naval Postgraduate School**. He is a distinguished naval aviator who participated in exercises throughout the Asia Pacific region and conducted combat missions in support of Operation Enduring Freedom. As a test pilot, he executed numerous flights evaluating weapon systems integration, and he served as a test pilot instructor. Delaney most recently worked as a research pilot at NASA’s Langley Research Center, in Hampton, Virginia, where he supported airborne science missions. Including his NASA career, Delaney logged more than 3,700 flight hours on 48 models of jet, propeller, and rotary wing aircraft.



ANDRE DOUGLAS

Andre Douglas, 35, is a Virginia native. He earned a bachelor's degree in mechanical engineering from the U.S. Coast Guard Academy, a master's degree in mechanical engineering from the University of Michigan, a master's degree in naval architecture and marine engineering from the University of Michigan, a master's degree in electrical and computer engineering from Johns Hopkins University, and a doctorate in systems engineering from the George Washington University. Douglas served in the U.S. Coast Guard as a naval architect, salvage engineer, damage control assistant, and officer of the deck. He most recently was a senior staff member at the Johns Hopkins University Applied Physics Lab, working on maritime robotics, planetary defense, and space exploration missions for NASA.

JACK HATHAWAY

Jack Hathaway, 39, commander, U.S. Navy, is a native of Connecticut. He earned bachelors' degrees in physics and history from the U.S. Naval Academy and completed graduate studies at Cranfield University in England and the U.S. Naval War College. A distinguished naval aviator, Hathaway flew and deployed with Navy's Strike Fighter Squadron 14 aboard the USS Nimitz and Strike Fighter Squadron 136 aboard the USS Truman. He graduated from Empire Test Pilots' School, supported the Joint Chiefs of Staff at the Pentagon, and was most recently assigned as the prospective executive officer for Strike Fighter Squadron 81. He has more than 2,500 flight hours in 30 types of aircraft, more than 500 carrier arrested landings, and flew 39 combat missions.

ANIL MENON

Anil Menon, 45, lieutenant colonel, U.S. Air Force, was born and raised in Minneapolis, Minnesota. He was SpaceX's first flight surgeon, helping to launch the company's first humans to space during NASA's SpaceX Demo-2 mission and building a medical organization to support the human system during future missions. Prior to that, he served NASA as the crew flight surgeon for various expeditions taking astronauts to the International Space Station. Menon is an actively practicing emergency medicine physician with fellowship training in wilderness and aerospace medicine. As a physician, he was a first responder during the 2010 earthquake in Haiti, 2015 earthquake in Nepal, and the 2011 Reno Air Show accident. In the Air Force, Menon supported the 45th Space Wing as a flight surgeon and the 173rd Fighter Wing, where he logged over 100 sorties in the F-15 fighter jet and transported over 100 patients as part of the critical care air transport team.

CHRISTOPHER WILLIAMS

Christopher Williams, 38, grew up in Potomac, Md. He graduated from Stanford University in 2005 with a bachelor's degree in physics and a doctorate in physics from MIT in 2012, where his research was in astrophysics. Williams is a board-certified medical physicist, completing his residency training at Harvard Medical School before joining the faculty as a clinical physicist and researcher. He most recently worked as a medical physicist in the Radiation Oncology Department at the Brigham and Women's Hospital and Dana-Farber Cancer Institute in Boston. He was the lead physicist for the Institute's MRI-guided adaptive radiation therapy program. His research focused on developing image guidance techniques for cancer treatments.

JESSICA WITTNER

Jessica Wittner, 38, lieutenant commander, U.S. Navy, is a native of California with a distinguished career serving on active duty as a naval aviator and test pilot. She holds a Bachelor of Science in aerospace engineering from the University of Arizona, and a Master of Science in aerospace engineering from the U.S. Naval Postgraduate School. Wittner was commissioned as a naval officer through an enlisted-to-officer program and has served operationally flying F/A-18 fighter jets with Strike Fighter Squadron 34 in Virginia Beach, Virginia, and Strike Fighter Squadron 151 in Lemoore, California. A graduate of U.S. Naval Test Pilot School, she also worked as a test pilot and project officer with Air Test and Evaluation Squadron 31 in China Lake, California.

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Clovis Woman Named to NASA's Newest Class of Astronauts

(*The Sun* 7 Dec 21) ... Reid Stone

With NASA launching its first class of astronaut candidates in four years, the San Joaquin Valley has something to cheer about: a native daughter potentially heading to space.

Jessica Wittner, a Lt. Commander in the U.S. Navy was selected to join the class of 10 astronaut candidates, NASA Administrator Bill Nelson announced Monday.

Wittner, an alumni of Buchanan High School and Clovis native, is a naval aviator. She is an alumni of the University of Arizona, graduating with a bachelor's degree in aerospace engineering. She received a master's on the subject from the **U.S. Naval Postgraduate School** in Monterey.

During her time in the U.S. Navy, NASA says, Wittner was commissioned as an officer via an enlisted-to-officer program and has flown F/A18-E Super Hornets with the Strike Fighter Squadron 34 (dubbed the "Blue Blasters") attached to the USS Harry Truman posted at Virginia Beach, Va. along with the Strike Fighter Squadron 151 (nicknamed the "Vigilantes") at Lemoore Naval Air Station.

Wittner has also served as a test pilot at Naval Air Weapons Station China Lake in Ridgecrest.

The Clovis native enlisted in the U.S. Navy in 2001 shortly after graduating from Buchanan and earned her commission in 2009 following graduation from the University of Arizona.

[Clovis woman named to NASA's newest class of astronauts \(sjvsun.com\)](#)

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University of North Florida Alumnus Chosen as One of 10 New NASA Astronaut Candidates

(*WOKV* 8 Dec 21) ... Lucia Viti

(*Gazette Journal* 8 Dec 21) ... Sherry Hamilton

University of North Florida alumnus and U.S. Marine Corps Maj. (retired.), Luke Delaney has been chosen by NASA to join the first new astronaut class in four years.

As one of 10 chosen among a field of more than 12,000 applicants across the U.S., the 42-year old Florida native received his bachelor's in mechanical engineering from UNF. The DeBary High School graduate also received a Masters Degree in Aerospace Engineering from the **Naval Postgraduate School**.

The distinguished naval aviator executed exercises throughout Asia's Pacific region and conducted combat missions for Operation Enduring Freedom. In addition to serving as a test pilot instructor, Delaney evaluated weapon system integrations. At the time of his selection as an astronaut candidate, Delaney worked as a Research Pilot at NASA's Langley Research Center supporting airborne science missions. His research includes collecting atmospheric data to make informed decisions on climate change and the environment for a "better understanding of the planet."

"So going from that science mission coming over to the space mission with this team is just an incredible experience," he said.

The Houston class is described as one of the most diverse astronaut classes to date.

Delaney will report for duty in January 2022 at Johnson Space Center to begin two years of intensive training. His future mission may include performing research aboard the space station, launching from American soil on spacecraft built by commercial companies, and "deep space missions" to the Moon on NASA's Orion spacecraft and Space Launch System rocket.

[University of North Florida alumnus chosen as one of 10 new NASA astronaut candidates – 104.5 WOKV](#)

[Local resident an astronaut candidate – Gazette Journal](#)

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RESEARCH:

NPS' Modeling, Virtual Reality Center Reimagines Navy Training

(*Navy.mil* 8 Dec 21) ... Rebecca Hoag

(*NPS.edu* 8 Dec 21) ... Rebecca Hoag

(*MilitarySpot* 9 Dec 21) ... Rebecca Hoag

NPS students in Research Associate Christian Fitzpatrick's Simulation Interoperability Practicum view a simulation and guest presentation in one of the MOVES Institute's laboratories in Watkins Hall. Fitzpatrick's research exploring the integration of live, virtual and constructive simulations together is one of several MOVES efforts advancing the efficacy of training via simulation in the Navy and DOD.

Before making offensive or defensive maneuvers, it's important to run through all the scenarios of what might happen. But when those moves involve massive aircraft carriers and multi-thousand-person crews, it can be a cumbersome, unrealistic task to always rehearse plays and train personnel live.

This is the domain of the The Modeling, Virtual Environments and Simulations (MOVES) Institute, an interdisciplinary academic center at the Naval Postgraduate School (NPS) that works to make it easier for military groups to wargame and practice maneuvers through combined simulation strategies and the integration of artificial intelligence (AI). The institute fosters an open environment for its faculty to explore topics important to the Navy and DOD at large.

"The main thing is to allow people to go off and find problems," says MOVES Director and NPS Research Associate Professor Dr. Imre Balogh.

And indeed they do ...

Christian Fitzpatrick, a 2009 NPS graduate, is a faculty research associate in the NPS Department of Computer Science who has worked with MOVES since 2018. He was recruited to teach a simulations networking class based on his experience in the Marine Corps Combat Development Command and Office of Naval Research (ONR).

His research combines three types of simulations – live, virtual and constructive, or LVC – together to reimagine training. To explain it in video game terms, think of virtual simulations as the character being controlled by the user and constructive simulations being all the other things in the video game that move and act on their own within the video game world, including the bosses. Fitzpatrick and his team of students are trying to figure out how to integrate live simulations, like running a drill, within constructive and virtual simulations.

"Our LVC research goal at MOVES seeks to enable small units on a live range to be able to act and react in response to the activities of enemy forces modeled in the constructive simulation," Fitzpatrick explains. "In addition, we want to integrate supporting units through the integration of virtual simulations. The challenge then for us is passing live operator data back into the constructive and virtual simulators. That's our main research focus."

The team, made up of Fitzpatrick and his thesis students, use Android devices to track the locations of live players in a virtual, constructive event. The Android devices have software applications that provide geospatial displays that can be passed amongst different players. So, if they place a virtual roadblock or other tactical activity somewhere in the training environment, the players can all get live updates on the location and status of it to aid in their scenario decision-making. They might send virtual missiles or a tactical aircraft ahead of their live trucks to destroy the threats before they get there, for example.

"The use of these simulations allows you to consider training with units that you might never have been able to live," Fitzpatrick says.

Understanding the ins and outs of LVC is valuable to his students, many of whom will have to conduct their own training as officers.

"Our students are leaving here understanding the whole notion of how LVC works. They get hands-on experience," Balogh says.

Furthering the dynamic nature of simulations is where Fitzpatrick could see his work merging with colleague Dr. Chris Darken's work in the future.

"[Darken] is looking at building entities that can learn over time and be more dynamic," says Fitzpatrick. "That's one of the areas we're looking at potentially integrating these agents into our existing combat simulations so they can be more dynamic and unpredictable."

Darken, an associate professor in the computer science department at NPS, has been a part of MOVES for 20 years, almost the life of the program, and is one of the core researchers looking into what AI and machine learning (ML) can do for operational planning. Darken is supporting the Naval Surface Warfare Center (NSWC) in Port Hueneme to investigate putting AI into operational planning simulations, and has been developing the foundation for this effort with the help of several graduate students he has mentored along the way.

Their work, similar to AI programs like Google's AlphaStar, looks like little blue dots trying to defend themselves against little red dots to the uninformed, but are doing so within different terrains under different objectives. As the simulation runs over the scenario repeatedly, the computer runs different scenarios, eventually learning the best way to complete the mission with the least number of casualties.

There are many different variables that can be added to this simulation such as how many units each party has, and what the terrain looks like; whether there's a city to defend, and how important defending the city or eliminating adversaries is. The programmer can choose how much of a reward the program will get for completing different activities, thereby creating priorities for the simulation to achieve one task over another. The programmer can also choose to provide negative awards, or basically punish the program for doing certain things. All these will help the program learn to make better decisions as the simulation runs. This approach to ML is called reinforcement learning.

Darken's work has varied implications for the DOD, according to MOVES leaders.

"There's like two different possibilities in what his work can do. One implication is, as we do our training, we often want simulated entities and we want our people to be challenged by those simulations. Right now, we have to use real people to play the enemy. If we had AI do some of that, it would make it easier to have people do their trainings," Balogh explains. "The other possibility is that it is conceivable, given the techniques that he's using, that people could figure out new tactics that have never been thought about before."

The first possibility lends itself nicely to improving the constructive simulation side of Fitzpatrick's work.

Fitzpatrick is also hoping to integrate secure networks into the simulations so military officials with higher security clearance could start training on simulations containing sensitive information.

"A lot of the units we work with are on secure networks," he says. "That is where they do most of their training ... So we're working to potentially find a way to connect to these secure networks and conduct testing or perform technology insertions into secure live events hosted by the Navy and Marine Corps."

Fulfilling this part of the project would require additional funding to sustain access to higher clearance material. Fitzpatrick hopes to have a program ready for the next Navy Large Scale Exercise planned for 2024.

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[Virtual Reality Center Reimagines Navy Training - MilitarySpot.com](#)

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NPS Researchers Use High-Tech Optics, Artificial Intelligence to Advance Laser Weapons Systems

(NPS.edu 13 Dec 21) ... Rebecca Hoag

(Navy.mil 13 Dec 21) ... Rebecca Hoag

A high-energy laser beam pointed over the ocean will get distorted by the atmosphere and marine layer, reducing its effectiveness in long-range defensive applications, particularly when the target is at a low elevation.

“You can think of the atmosphere as a changing medium due to temperature variations,” explains Dr. Jae Jun Kim, a Naval Postgraduate School (NPS) Research Associate Professor in the Mechanical and Aerospace Engineering (MAE) department.

Researchers at NPS are using every tool at their disposal to reduce atmosphere-induced aberrations, or “clean” the laser beam, so it has a chance to reach a target farther away in a deep turbulence environment.

The multidisciplinary team, under the direction of Dr. Brij Agrawal, NPS Distinguished Professor in MAE, and Kim successfully completed the development of a \$3 million High-Energy Laser Beam Control Research Testbed (HBCRT) in 2016. The group is made up of NPS researchers and students with assistance from non-NPS researchers from the Naval Research Laboratory (NRL), Lockheed Martin, the Air Force Research Laboratory (AFRL), and the Naval Surface Warfare Center (NSWC) in Dahlgren.

The research project is supported by the DOD’s Joint Directed Energy Transition Office (DE-JTO), the Defense University Research Instrumentation Program (DURIP), and the Office of Naval Research (ONR).

The HBCRT consists of Acquisition, Tracking, Pointing (ATP), and adaptive optics systems. The testbed is similar to the Laser Weapon System (LaWS) currently used in the Navy’s USS Ponce. After many months of delays, the team finally received the highly anticipated, half-a-million dollar deformable mirror from Northrop Grumman to further their deep turbulence adaptive optics research. The mirror represents the state-of-the-art in adaptive optics, with a two-inch diameter mirror and hundreds of actuators. Upon successful testing of deep turbulence compensation, the deformable mirror will be integrated into the HBCRT.

“As deformable implies, you can change the shape of the mirror using actuators attached to the back of the mirror to compensate for laser beam aberration,” Agrawal explains.

This deformable mirror is used in conjunction with two other deformable mirrors in a Multi-Conjugate Adaptive Optics (MCAO) configuration. Dr. Bautista Fernandez has developed a graphical user interface (GUI) for controlling the deformable mirror.

“When you have no aberrations on the system, you have a flat wavefront,” Fernandez says. “As soon as you have an aberration, the wavefront distorts.”

Once an aberration is spotted, Fernandez adjusts the channels using his GUI, which is basically a grid representing the different actuators. By clicking on a spot in the grid, he can adjust a channel by applying some voltage to it.

In the lab, the team uses eye-safe visible light to test the lasers, but in the field, tests would be conducted using infrared.

The team is also working on incorporating artificial intelligence (AI) technology for automatic target detection, classification, aimpoint selection and maintenance. This project is also funded by DE-JTO.

The team consists of NPS (principal investigator), Lockheed Martin, Air Force Research Laboratory, and NSWC-Dahlgren. Traditionally, aimpoint has been executed in the past by human operators. Current AI work can select the aimpoint of a single target faster than a human can. The AI techniques are being implemented into the HBCRT and will be compared with traditional approaches.

To achieve higher accuracy results with the AI techniques, a large training dataset consisting of realistic target images is required. The team has developed a dataset with 3D-printed titanium unmanned aerial vehicle (UAV) models. UAV images are captured by the HBCRT at varying orientations.

Dr. Leonardo Herrara, a National Research Council (NRC) Postdoctoral Associate, is developing these UAV images. He has created about 40,000 images with the testbed so far.

Continuing the AI theme, three Navy master's students designed their theses around applying AI techniques for high-energy laser beam control. The team is also working on predicting atmospheric turbulence and the correction of target image aberrations using AI.

"We are also excited about using AI for correcting aberrations in the target image because conventional adaptive optics requires very complex optics systems like additional lasers, sensors, very fast cameras, and complex mathematical algorithms to determine the distortion in the wavefront," Kim says. "We're trying to use this AI technology, so instead of using the beacon light, why don't we try to use the actual image of the target to determine the distortion?"

It's a potential direction for the team for a future project. For now, their two AI projects and working towards connecting the distorted mirror to the testbed keep them busy enough.

[NPS Researchers Use High-Tech Optics, Artificial Intelligence to Advance Laser Weapons Systems - Naval Postgraduate School](#)

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NPS Gains Access to Joint Information Operations Range

(*NPS.edu* 13 Dec 21) ... Mass Communication Specialist 2nd Class James Norket

(*Navy.mil* 13 Dec 21) ... Mass Communication Specialist 2nd Class James Norket

The Naval Postgraduate School (NPS) has added a new capability to the university's technological toolbelt with a node connecting NPS to the Joint Information Operations Range (JIOR). This advanced capability provides NPS faculty and students with access to a globally-distributed, closed-loop, live-fire cyber range complex that integrates users and capability providers to enable classified training, testing and experimentation.

The node and installation were supported by the Joint Staff J7, recognizing the critical role of NPS in bringing together DOD and industry partners for collaboration on key defense-related areas.

U.S. Army Lt. Col. Michael Senft, a military faculty lecturer in the NPS Department of Computer Science, worked diligently with the Joint Staff J7 and multiple stakeholders across NPS to bring the JIOR node installation to fruition despite challenges created by the current COVID environment. The JIOR is a closed-loop, scalable and transportable network providing a secure and accredited training and test environment. This capability provides students and faculty researchers access to both persistent and ephemeral training and testing event environments.

"Access to the JIOR helps support the essential classified research and education mission of NPS," Senft said. "This node connects NPS to other organizations with access to the JIOR through creation of virtual test ranges for evaluation of cyber capabilities."

JIOR connectivity enables NPS students and faculty to connect with realistic cybersecurity environments including the National Cyber Range Complex, Persistent Cyber Training Environment, and CyberTropolis. CyberTropolis, located at the Muscatatuck Urban Training Center in Indiana, replicates the cyber environment of a real city.

"The JIOR allows organizations to connect securely at multiple classification levels to test and evaluate different programs and capabilities," stressed Senft. "The information technology architecture on a Navy ship, for example, is not something that we can replicate in an unclassified environment. JIOR allows NPS to securely connect with organizations that have existing physical and virtual environments identical to those present on a ship to allow testing of new capabilities."

The JIOR currently has over 100 access points across the U.S. and other countries. This allows NPS to securely connect with other organizations including many that are developing next-generation capabilities for the DOD.

"Our industry partners are key and being able to collaborate with them in a secure environment is enabled by JIOR," added Senft. "We are able to conduct tests and evaluations on a temporary network designed for a specific testing or experimentation event."

Given the prevalence of cyber-related capabilities across current DOD and DON strategies, expanding NPS research capabilities in cyber at the classified level was part of the university's strategy. NPS' connection to the JIOR is a completed action from the NPS 2018-2023 Strategic Plan to support expansion of classified cyberspace operations research and education. Specifically, action S4.2 states, "We will upgrade our classified networks to ensure uninterrupted, high-speed access at the Top-Secret level to our sponsors and provide them with enhanced test environments. We will establish a Joint

Information Operations Range node at NPS in order to support visibility and participation in classified experiments and exercises."

Thanks to the efforts of Senft and critical support from NPS and partner organizations, NPS has expanded access for its classified cyberspace operations research and education programs. The JIOR node brings another invaluable capability to the university and its direct support to warfighters.

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Parents of Parkland Victim Urge Biden to Act on Gun Control

(*Al Jazeera* 10 Dec 21) ... Ali Harb

When a gunman killed four students at a high school in Michigan last week, the tragedy not only invoked painful memories for Patricia and Manuel "Manny" Oliver, it pushed the couple to renew their call for action.

The Olivers, who lost their son Joaquin in a deadly 2018 attack at a high school in Parkland, Florida, are staging an open-ended protest in Washington, DC, to demand a meeting with President Joe Biden – and to urge him to "declare war on gun violence" in the United States.

"We need to increase the urgency and expose the message that we urgently need to do something different and not think these shootings are normal things," Manuel told *Al Jazeera*, sitting on a white cement block across from the White House.

The couple's son was one of 17 people killed at Marjory Stoneman Douglas High School in Parkland when a 19-year-old former student – armed with a legally purchased AR-15-style semiautomatic rifle – opened fire on students and staff for six minutes.

Patricia described her son, 17 when he died, as "very special", sweet and intellectually curious. "I was numb. I was in shock. I couldn't talk. I couldn't see," Patricia told *Al Jazeera* about how she felt after her son's death.

That grief, she added, never diminished; she only learned to power through it and said activism was part of that process. "I am here because Joaquin is letting me stay here."

'Trigger'

The Parkland attack was one of the deadliest school shootings in American history – but far from the last.

There were 31 school shootings in the year following the Parkland incident, according to a CNN report, while a database by the **Naval Postgraduate School** Center for Homeland Defense and Security has documented hundreds of gun-related incidents on school grounds since 2018.

In one of the most recent incidents, four students were killed, and seven other people were injured on November 30 when suspected shooter Ethan Crumbley, 15, opened fire at Oxford High School, north of Detroit. Crumbley is facing several charges, including murder and terrorism.

The Michigan shooting was a "trigger" for the Olivers to step up their activism, Patricia said.

"We understand perfectly those parents and what they're going through now," she said. "We were in that position almost four years ago. So, today when this happens again, we have the strength to take action right away."

Dressed in a zipped-up black jacket with a necklace featuring a photo of Joaquin, Patricia said she and her husband are getting a lot of support for their protest. Friday was the couple's ninth day near the White House, and several passersby stopped to greet them and laud their efforts.

They are using the hashtag #MeetWithManny to spread awareness. Manuel, who campaigned for Biden and met with him last year, said turning to the president after the shooting in Michigan was a logical course of action.

"What's the highest authority in this place that we can talk to? That guy," Manuel said, pointing at the White House.

Biden urges legislation

Amid a spate of deadly shootings earlier this year, Biden denounced gun violence as a "national embarrassment" for the country and pledged to do more to tackle the problem. He has called on Congress to pass gun control legislation, and pledged additional funds for community-based violence prevention programmes.

"Talk to most responsible gun owners and hunters, they'll tell you there's no possible justification for having a hundred rounds in a magazine," Biden said in June. "There [are] too many people today buying guns that shouldn't be able to buy a gun."

But with a political deadlock in Congress, where a mechanism known as the filibuster grants the Republican minority in the Senate veto power over major legislation, the push to enact stricter gun laws faces an uphill battle.

On Friday, Manuel Oliver said Biden nevertheless should declare a national emergency and use his influential platform as president to prioritise the issue.

"If the president decides to declare war on gun violence and addresses that message at the State of the Union, that will mean a lot," he said, referring to the annual presidential address. "I'm just talking about the attitude from the leader of this country."

Manuel showed Al Jazeera a statement that a White House official sent them via email this week in response to the protest.

The official highlighted three House-approved bills to tighten gun-control rules that are stuck in the Senate, including one that would require universal background checks for gun buyers, as well as Biden's social spending legislation, which includes funding for gun violence prevention.

"Americans young and old are dying from gun violence every day," the statement said. "Every one of those individuals has a family and every one of those individuals leaves a hole in their community. That's why the president will continue to pursue steps he can using existing authority to reduce all forms of gun violence."

Gun culture

The Second Amendment of the US Constitution grants the right to "keep and bear arms" and gun rights advocates argue that weapons in the right hands can save lives.

Powerful gun lobby groups, as well as some US legislators from both major parties, are also opposed to putting stricter rules in place, arguing that such measures would violate the Second Amendment.

But the push for stricter gun laws has gained momentum in recent years, in large part due to the activism of Parkland shooting survivors. Months after the shooting, thousands gathered across the country as part of the student-led March for Our Lives movement.

While the student activists succeeded in bringing gun violence to the forefront of the national debate, prompting the passage of dozens of gun control laws at the state level, gun violence has worsened since 2018.

Weapon sales have spiked during the coronavirus pandemic and so has deadly gun violence last year. But the Olivers say they are confident that their battle against gun violence will succeed.



"It's going to take a while. Just like the tobacco industries today have very little power ... the same thing will happen with the gun culture and the gun industry – I think it is going to vanish with time," Manuel said.

[Parents of Parkland victim urge Biden to act on gun control | Gun Violence News | Al Jazeera](#)

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Changing Hearts and Brains: SOF Must Prepare Now for Neurowarfare

(*Small Wars Journal* 12 Dec 21) ... Dr. Shannon Houck, Col. John Crisafulli, Lt. Col. Joshua Gramm, Maj. Brian Branagan

The timeworn "changing hearts and minds" idiom may soon take on a more literal meaning as we confront the weaponization of neurotechnology. In December 2016, CIA officers and American and Canadian diplomats stationed in Havana, Cuba reported hearing pulsing sounds, sometimes accompanied by pressure sensations in their heads. Neurological symptoms followed – symptoms like headaches, dizziness, cognitive difficulties, fatigue, and hearing and vision loss. Over 40 U.S. government employees were affected; 24 were diagnosed with brain damage. These were not isolated incidents. Similar reports have emerged from U.S. personnel in China, Russia, Uzbekistan, and CIA officers working in several different countries. Two separate cases in the Washington D.C. area are currently under investigation after U.S. officials suffered from the same sudden symptoms, one occurring in an Arlington suburb in 2019, and the other in the oval lawn of the White House in 2020. Most recently, media reports from April 2021 indicate that DoD officials briefed the Armed Service Committee, stating they are "increasingly concerned about the vulnerability of U.S. troops in places such as Syria, Afghanistan, and various countries in South America."

No official cause has been stated and multiple investigations are ongoing. However, evidence from the Cuba incidents suggest these were targeted attacks. Dr. James Giordano, a neuropathologist and one of the State Department-appointed scientists who investigated the Cuba cases, stated in his 2018 USSOCOM/J5 Donovan Group SOFWERX brief: "this is intentional, this is directed, this seems to be a beta test of some type of a viable neuroweapon." This conclusion leaves many questions. Who coordinated and executed this beta test? What neuroweapon(s) were used? What state and non-state adversaries have or will soon have advanced neurowarfare capabilities? Are the same actor(s) responsible for the attacks overseas and now domestically? Scholars and practitioners hypothesize different possibilities, including pointing the finger at Russia, but as of 2021, definitive answers remain unclear. And the most important question looms: What neurowarfare attacks are coming next that we must prepare for now?

SOF operators do not currently receive any direct training on neurowarfare (indeed, most are unfamiliar with the concept entirely), and published research is strikingly limited. Of the small number of academic publications on the topic, only a handful directly address neurowarfare. Special Operations Forces (SOF) are uniquely positioned to confront the complex and dynamic threats neurowarfare poses but is currently under-prepared to take up the challenge. Part of the reason is a lack of general awareness. Although US Special Operations Command (USSOCOM) prioritizes neuroscience research and innovation, especially for cognitive enhancement, comparatively less is known about neuroweapons that cause cognitive degradation.

In line with USSOCOM's 2020 'Innovation for Future Threats' priority, the present article aims to fill this gap by providing actionable recommendations: (1) immediately implement training across the SOF enterprise; (2) invest in research on (a) cognitive degradation caused by neuroweapons, and (b) neuroweapons detection, disruption, and targeting; and (3) develop doctrine on neurowarfare. Ultimately, SOCOM needs to take a proactive stance by developing 'neuro SOF professionals' equipped to strategically navigate this new battlespace. To provide the necessary foundation for these recommendations, we first define neurowarfare, briefly discuss its use in defense and security over time, and then detail the critical significance for SOF today.

What is Neurowarfare?

Neurowarfare is the strategic takedown of a competitor through the use of neuroweapons that remotely “target the brain or central nervous system to affect the targeted person’s mental state, mental capacity and ultimately the person’s behavior in a specific and predictable way.” Just like cyber warfare, neurowarfare can be waged defensively or offensively. In a defensive capacity, neurowarfare could prevent conflict before it starts, easing tensions by shaping attitudes and perceptions about the potential adversary. In an offensive capacity, neurowarfare could “manipulate the political and social situation in another state,” thus destabilizing the adversary, either as a stand-alone tactic or in conjunction with a military strike. Psychological operations share similar goals but achieve them through communication, typically over the long-term. Neuroweapons physically manipulate the brain and achieve immediate effects.

Neurowarfare: Then and Now

Brain modification in defense and security is not new. Under the guise of Project MKUltra, the CIA conducted human experiments during the 1950s and 60s in the hopes of exploiting mind control through hypnosis and experimental drugs. Over 80 institutions were involved, ranging from universities, hospitals, prisons, and pharmaceutical companies. This program was largely a response to fears of Soviet and Chinese Communist thought-control, or ‘brainwashing.’ Also consider that during the Vietnam War, some American soldiers took various pharmaceutical agents (e.g., codeine, dexedrine) to heighten alertness and dull feelings of vulnerability. Dexedrine/dextroamphetamine – a stimulant drug shown to improve cognition, alertness, and reduce fatigue – is still used today and is indeed an approved cognitive performance mechanism by the U.S. Air Force.

What makes brain modification new for warfighters today is the rapidly advancing technology in neuroscience. In the 21st century, neuroscience research, development, and innovation, combined with biotechnology, nanotechnology, and artificial intelligence, has paved the way for entirely new industries that will likely lead to commercial development. Most of the research is currently being done in universities and the private sector; however, in 2013 President Obama marshalled the American BRAIN (Brain Research through Advancing Innovative Neurotechnologies) initiative, a National Institute of Health (NIH)-directed plan to further understanding of the human brain by integrating multiple scientific communities, agencies, and organizations. As of 2019, over 700 grants totaling \$1.3 billion have been allocated, with the initiative continuing at least through 2025. As far back as 2013, the neurotechnologies market potential was estimated at more than \$150 billion, with projected growth in Asia and South America to surpass the West by 2020. The U.S. is not alone in these endeavors, and will need focused attention to stay atop the research and development leaderboard.

The return on investment is evident. USSOCOM is becoming increasingly adept at developing the hyper-enabled operator (HEO) – “a SOF professional empowered by technologies that enhance the operator’s cognition at the edge by increasing situational awareness, reducing cognitive load, and accelerating decision making.” Yet these same advancements that add value for cognitive enhancement pose risks when used for cognitive degradation.

Cognitive enhancement versus degradation

Neurotechnological advancements present a double-edged sword, offering opportunities for both cognitive enhancement and cognitive degradation. Both are relevant to SOF readiness and resilience. Enhancement capabilities generally fall into three categories. First, neuropharmacology uses drugs designed to target specific areas of the brain, potentially even breaching the blood-brain barrier. Second, brain stimulation uses electric currents to stimulate specific areas of the brain. Third, brain-computer interfaces (BCIs) involve opening up pathways to connect the brain to a computer in order to allow the two-way flow of information, either to program new behaviors or control external machines and devices. Such technologies have the capability to improve warfighter performance by enhancing memory, concentration, motivation, and situational awareness while negating the physiological ills of decreased sleep, stress, pain, and traumatic memories. According to a 2020 RAND report, “In general, BCI could

theoretically be applied to help future warfighters make more informed decisions within a shorter timetable or to more effectively engage with more robotic systems than their current counterparts.” In the future, military commanders may not only be able to monitor but also control the mental performance of troops under their command by increasing performance without sleep, modulating emotions under stress, and thinking through emerging threats. The U.S. Army is even pursuing ‘synthetic telepathy,’ a technology designed to allow military members to communicate using only their brains. But in the hands of an adversary, all enhancement technologies can also be used for degradation.

Neuroweapons cognitively degrade a target using different modalities. First, similar to neuropharmacology on the enhancement front, biochemical agents can incapacitate or influence the actions and emotions of enemies and noncombatants alike. Second, directed energy weapons include a broad class of devices that use intense energy to achieve a desired effect, be it lasers, electro-magnetic pulse (EMP), or radio-frequency/acoustic weapons that impair brain function causing temporary incapacitation and/or death. Some form of directed energy weapon was likely responsible for the attacks against U.S. personnel in Cuba and China. Finally, information- and software-based weapons can manipulate the brain, either tangibly with implants or at a distance by manipulating brain responses.

The Department of Defense has rightly recognized the benefits that neurotechnology can have on individual soldiers, and so the focus, at least from what is publicly available, is overwhelmingly on cognitive enhancement. The same level of effort is now needed to understand cognitive degradation and forecast what is on the horizon in the neurowarfare domain, especially given the stated priorities of U.S. adversaries. For example, China is seeking to dominate the field of neuroscience; their Grand Strategy calls to be a world leader by 2030. China’s aggressive research into this field makes it likely China will find ways to effectively militarize this emerging technology in future years. In spite of the DoD’s acute focus on Great Power Competition, relatively little attention is granted to neurowarfare. SOF needs to strategize how to combat this threat now and forecast accelerating developments in this domain in the coming years.

What does this mean for SOF?

Great Power Competition is about access and influence; so is SOF. Similar to the ideological battles of the Cold War, the competition space between an American-led world order and a Chinese or Russian-led one is likely to play out on the periphery more than direct confrontation. These are the very places SOF lives and excels. Serving as human sensors and being attuned to the changing global dynamics requires innovative, adaptable, and highly specialized warfighters that SOF brings every day. SOF should position themselves in a leading role in the domain of neurowarfare for several reasons.

First, SOF is small, specialized, and thrives under uncertain and dynamic conditions that require constant adaptation; neurowarfare will also continue to develop under a veil of uncertainty, complexity, and secrecy that will require an attuned ethos. Second, SOF has a large global footprint, operating in as many as 141 countries as recently as 2019. This means they are both uniquely engaged and uniquely exposed to new forms of warfare. Due to the longer training cycles and specialized skills, SOF would be considered high-value targets for potential adversaries. Similar to high-value cyber targets, emphasis should be placed on hardening SOF against neuroweapon threats. Third, the past two decades of counterterrorism operations has enabled SOF to develop strong interagency partnerships that can be leveraged in neurowarfare. Finally, SOF has experience being at the forefront of technological developments and is already heavily invested in cognitive enhancement research and development. Much as they do today in many areas, USSOCOM can be a pathfinder organization, serving as an incubation laboratory that builds expertise and capability, which can subsequently be exported to the rest of the force at reduced costs.

Training and education across the SOF enterprise.

Awareness of current and emerging threats is critical for force readiness. In the short-term, formalized training should be developed and implemented now. All USSOCOM components would benefit from a general awareness training on neurowarfare that covers basic information -- what it is, why it matters, effects on the brain, and warning signs to be aware of. But more in-depth, specialized training



is merited for information practitioners working in intelligence, psychological operations, and cyberwarfare. Such training would ideally detail the neuroscience of influence, defensive and offensive cognitive enhancement and degradation applications, current and near-future neuroweapons capabilities, and an analysis of neuroweapons attacks case studies.

Longer-term, it will be critical to develop ‘Neuro SOF’ professionals who remain at the cutting edge of the neuroscience of war. **Naval Postgraduate School**, for example, is perfectly positioned to serve as the critical nexus between the strategic and operational challenges of neurowarfare. Similar to the cyber domain, competing with our adversaries in neurowarfare requires technical experts who can think through the terrain and develop innovative solutions. In the longer-term, primary military education (PME) institutions should staff credentialed neuroscientists who can fill current curricular gaps to rising military leaders. In the meantime, PME’s may be able to leverage currently employed cognitive scientists or scholars in the private sector to contribute to this educational need. Moreover, strengthening education and training requires ongoing, rigorous research.

Investigating neuroweapons: Cognitive degradation research

To compete in this space, USSOCOM must place the same level of investment and momentum on research specific to cognitive degradation as it does cognitive enhancement. This means making cognitive degradation research a documented priority and putting resources behind it. These simultaneous lines of effort are mutually beneficial. Considering operator well-being and performance holistically means building up enhancement capabilities such that operators are “hyper-enabled” and hyper-protected. Right now, the force is vulnerable to neuroweapons attacks, in part because we do not have answers to basic questions. How do we detect and disrupt neuroweapons? What is needed to overcome the challenges with discerning attribution of neuroweapons attacks? What type operators should be developed into ‘neuro SOF professionals’ and what skills should they have? Under what conditions should SOF employ neuroweapons against adversaries, if at all?

Similar to SOF’s “Hyper-enabled operator,” USSOCOM’s acquisition arm, SOF Acquisition, Technology, and Logistics (SOF AT&L), is flexible and responsive enough to stay engaged with private sector advancements and transmit information rapidly to the force. The possibilities and potential use-cases for neurowarfare are almost endless and will depend on the technologies created, thus a tight relationship is essential. This uncertainty in the face of rapid neurotechnological acceleration underscores the importance that SOF is guided by doctrine to help shape the way forward.

Develop doctrine

As in all areas of conflict and competition, USSOCOM’s actions in the neurowarfare domain should be guided by doctrine. Currently, there are no national laws or international agreements that restrict the weaponization of the human brain. While U.N. treaties against biological and chemical weapons send a signal to be wary that future bans may be coming, neuroweapons fall into a legal and regulatory gap. Similar to nuclear development, science often forges ahead of political and ethical matters of use, a term called “the Collingridge dilemma.” As neuroweapons likely expand in the future, the legal and ethical challenges that need to be address will become paramount. SOF has developed expertise in precise, narrowly tailored effects on the battlefield that likely have similar spillover properties for neurowarfare.

Additional Considerations

While we’ve focused on the unique role SOF and USSOCOM can and should play when it comes to neurowarfare, the fact is that this new form of warfare will ultimately require the United States to take a whole-of-government approach, requiring attention and resources not only from the DoD, but also the interagency and the National Security Council. The most difficult—and likely to be the most contentious—are the serious moral and ethical concerns of whether the United States should consider pursuing offensive neuroweapons. Should the United States pursue an offensive capability, even if only discovered accidentally through private sector research? If so, what sort of weapons would be morally acceptable to use and how should they be employed? Should these weapons be reserved for high-priority

targets or will we get to a point where neuroweapons are routinely employed in conjunction with more traditional forms of warfare? It is beyond the scope of this article to enter into that debate, but we acknowledge the seriousness and gravity with which academics and policy makers will need to approach this topic.

Conclusion

The weaponization of neurotechnology poses unique challenges in a strategic environment that emphasizes competition between major powers. As powers compete for influence against one another, neuroweapons that directly target the brain to sway an adversaries' actions are likely to be employed with increasing frequency. USSOCOM must adopt a proactive stance. Too often, reactionary measures leave U.S. Forces playing catch up, as we are currently doing in the information environment. No longer should we conceptualize the human mind as a target for psychological influence through communication operations over long periods of time; neurotechnology paves the way for influence via physical brain modification to achieve almost immediate psychological shifts. SOF needs to decide now how to operate in this domain.

[Changing Hearts and Brains: SOF Must Prepare Now for Neurowarfare | Small Wars Journal](#)

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FACULTY:

NPS Professor to Compete on Jeopardy! Tonight

(*California News Times* 8 Dec 21)

(*KSBW* 8 Dec 21)

Professors of Monterey are competing in Jeopardy! Tonight, Sam Batley is an associate professor of operations research at the **Naval Postgraduate School** and one of the 15 professors in the first ever professor tournament. They are competing for the \$ 100,000 grand prize and champion tournament spots... An old Jeopardy with 400,000 fans! There is a website that summarizes the questions. Currently, they are not reusing the question, but by reading the old question, you can feel what they are trying to emphasize. Tonight's KSBW8 7:00 pm episode.

Professors of Monterey are competing in Jeopardy! tonight.

Sam Buttrey is an associate professor of operations research at the Naval Postgraduate School.

He is one of the 15 professors in the first ever professor tournament. They are competing for the \$ 100,000 grand prize and champion tournament spots.

"I got up and practiced. I wanted to make sure I got up and playing, but after jumping into the roll of toilet paper, I read all the old questions. Fans are 400,000 old Jeopardy! There is a website that summarizes the questions. Currently, they are not reusing the questions, but by reading the old questions, you can feel what they are trying to emphasize," Batley said. I am.

[NPS professor to compete on Jeopardy! tonight - California News Times](#)

[NPS professor to compete on Jeopardy! tonight \(ksbw.com\)](#)

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'Jeopardy!' Viewers Spot a Steve Martin Dopplegänger on the Show

(*Yahoo!* 9 Dec 21) ... George Back

One of the contestants on Wednesday's Jeopardy! had viewers wondering if Steve Martin had somehow snuck onto the game show. Sam Buttrey, an associate professor of operations research at the **Naval Postgraduate School** in Monterey, Calif., bore an uncanny resemblance to the legendary comedic actor.



Buttrey set Twitter abuzz with his Martin-like platinum hair, gentle smile and robust nose. Several viewers even thought he sounded like Martin.

Viewers also found it interesting that Martin famously portrayed King Tut on Saturday Night Live, and King Tut was one of the categories in the opening round. Even though Martin once played The Man With Two Brains, Buttrey only needed his one brain to win the game and advance to the semifinals.

Buttrey is part of the Professors Tournament, which runs through next week. The winner of the tournament goes home with a cash prize of \$100,000. But in truth, he's already a winner for looking like one of the most beloved entertainers of the last 50 years.

[Viewers think the latest 'Jeopardy!' winner looks just like Steve Martin \(yahoo.com\)](#)

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'Jeopardy!' Viewers Obsess Over Steve Martin Doppelganger Contestant

(PopCulture 9 Dec 21) ... Stephen Andrews
(TVInsider 9 Dec 21) ... Martin Holmes

Jeopardy! viewers have been obsessed over a recent contestant who many think is a perfect doppelganger for legendary comedian and actor Steve Martin. On Wednesday's episode, Sam Buttrey — an associate professor of operations research at the **Naval Postgraduate School** in Monterey, California — went head-to-head-to-head with two other payers on the iconic quiz show. Almost immediately, Jeopardy! fans began taking to social media to comment on how Buttrey bears an uncanny resemblance to Martin.

Notably, looking at photos of the men side-by-side, it becomes clear that they really do have similar features beyond just both having white hair and glasses. The shapes of their noses are close to one another, as are their eyes and ears. Interestingly, Buttrey ended up being the episode's big champ, which puts him in the Professors Tournament semi-finals. The winner of that tournament will leave with a \$100,000 cash prize. Even still, it seems viewers are more distracted by Buttrey's resemblance to Martin, than his impressive Jeopardy! skills. Scroll down to see what people are saying on Twitter!

['Jeopardy!' Viewers Obsess Over Steve Martin Doppelganger Contestant \(popculture.com\)](#)
['Jeopardy!' Viewers Think This Contestant Is the Spitting Image of Steve Martin \(tvinsider.com\)](#)

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FACULTY BOOK AWARD:

Global Jihad: A Brief History Named a 2021 Best Book of the Year by Foreign Policy and Foreign Affairs.

(Stanford University Press 12 Dec 21) ... Stephen Andrews

Most violent jihadi movements in the twentieth century focused on removing corrupt, repressive secular regimes throughout the Muslim world. But following the 1979 Soviet invasion of Afghanistan, a new form of jihadism emerged—global jihad—turning to the international arena as the primary locus of ideology and action. With this book, Glenn E. Robinson develops a compelling and provocative argument about this violent political movement's evolution.

Global Jihad tells the story of four distinct jihadi waves, each with its own program for achieving a global end: whether a Jihadi International to liberate Muslim lands from foreign occupation; al-Qa'ida's call to drive the United States out of the Muslim world; ISIS using "jihadi cool" to recruit followers; or leaderless efforts of stochastic terror to "keep the dream alive." Robinson connects the rise of global jihad to other "movements of rage" such as the Nazi Brownshirts, White supremacists, Khmer Rouge, and Boko Haram. Ultimately, he shows that while global jihad has posed a low strategic threat, it has instigated an outsized reaction from the United States and other Western nations.



About the author

Glenn E. Robinson is on the faculty at the **Naval Postgraduate School** in Monterey, California, and is affiliated with the Center for Middle Eastern Studies at the University of California, Berkeley. He has served as an expert advisor to USAID and the US Department of Defense.

[Global Jihad: A Brief History | Glenn E. Robinson \(sup.org\)](#)

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ALUMNI:

Parkway West Graduate is Now Commanding Officer of USS Oakland

(Fox2Now 7 Dec 21) ... Monica Ryan

A 1999 Parkway West High School graduate is now the commanding officer of USS Oakland (LCS 24) Blue Crew.

Cmdr. Derek C. Jaskowiak officially took over during a change of command ceremony on December 3.

The USS Oakland is an Independence-variant littoral combat ship. It is designed to operate in near-shore environments, winning against 21st-century coastal threats. It is also capable of “supporting forward presence, maritime security, sea control, and deterrence.”

The Navy Office of Community Outreach said the new command means Jaskowiak has “absolute authority and responsibility to ensure the safe handling of Oakland and the safety, well-being and proficiency of the crew.”

Prior to serving as the commanding officer, Jaskowiak served as Oakland Blue Crew’s executive officer.

Jaskowiak graduated from the United States Naval Academy in 2003 with a Bachelor’s Degree in Systems Engineering. While attending school, he was the starting left tackle on the football team. He earned a Master’s of Science degree in Systems Technology from the **Naval Postgraduate School** in 2004.

[Parkway West graduate is now commanding officer of USS Oakland \(fox2now.com\)](#)

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