Charles River Analytics: Artificial Intelligence is Challenged in Arena of Competition



The intuitive user interface of the Explainability and Terrain Reasoning for Autonomy (EXTRA) effort will deliver humanunderstandable explanations of deep reinforcement learning software behavior. CHARLES RIVER ANALYTICS ARLINGTON, Va. – A small company developing artificial intelligence technology for the Office of Naval Research is halfway through a 24-month contract performance toward

demonstrating its AI technology for the Navy.

"It's all about trying to develop technologies that can help decision makers," said Jeff Druce, senior research scientist at Charles River Analytics, in an interview with *Seapower*. "They have lot on their plate as far as the watch-floor commanders, making decisions with limited, partial, incomplete information. "AI has shown — at least in an academic setting — promise at being able to reason about these complex scenarios and make really effective decisions in a variety of arenas," Druce said, noting rhetorically that with autonomy, "Can you have a system that gives information about the world and tries to take actions that are going to beneficial to the entity in some way?

"There's not a lack of information out there; it is getting the right information in the right format to be useful," he said. "What is the relevant information, especially if you're in a divided-attention task, it becomes like a human-factors problem, as in, 'What is the most useful information to provide this person in what format that they can use it to make better decisions?'"

Druce envisions AI "as not taking over at all but very much a collaborative human-machine teaming where AI can handle these processes that require a lot of attention and are time consuming but sort of easy to be done in that there's no incredibly challenging reasoning that has to be done but ultimately will help with the attention problem of the human user."

Charles River Analytics started out with Small Business Innovative Research Phase 1 work, Druce said, but "a lot of that technology and that motivation ended up going into this larger, EXTRA [Explainability and Terrain Reasoning for Autonomy] effort [for ONR].

"We're trying to bring in some of the modern AI tools" to the effort, he said. "The deliverables are mostly demonstrations and software based. These things are pretty leading edge."

Druce said a "demonstration in a representative domain that these autonomous agents are doing reasonable things could lead towards a good performance in the physical environment."

He said the technology his company develops needs to be

demonstrated in an "arena of competition ... pitting AIs against each other to see how they perform. ... Can you take your technology and pit it against somebody else's in a lesscontrolled environment ... and see how it does?"

Druce said AI is challenging to his company's workers, but the challenge is what promotes their best work.

"These are hard questions with unknown answers," he said. "When you give smart people these challenging problems, you can see that [with] doing cool things, they motivate themselves."

Navy's MQ-8C Fire Scout Operating in Westpac; MQ-8Bs to Be Retired



Aviation Electronics Technician 1st Class Corie Wooldridge, from San Marcos, California, performs ground turns on an MQ-8C Fire Scout, attached to the "Wildcards" of Helicopter Sea Combat Squadron 23, assigned to the Independence-variant littoral combat ship USS Jackson (LCS 6). U.S. NAVY / Mass Communication Specialist 3rd Class Charles DeParlier ARLINGTON, Va. – The Navy's MQ-8C version of its Fire Scout unmanned helicopter is now operating on its first deployment to the Western Pacific, the second deployment of the type so far. Meanwhile, the Navy is proceeding with plans to accelerate retirement of the fleet of older MQ-8B versions in fiscal 2023.

The Independence-class littoral combat ship USS Jackson (LCS 6) is operating with a detachment from Helicopter Sea Combat Squadron 23, which includes an MQ-8C. The Jackson in the first LCS deployed to the Western Pacific since the summer of 2020 and began operations with the MQ-8C on April 20. Two other LCSs are deployed in the Indo-Pacific region with the older MQ-8B version

The Northrop Grumman MQ-8C, based on the Bell 407 airframe, can carry the Leonardo ZPY-8 Osprey radar, the Teledyne FLIR Brite Star II electro-optical/infrared sensor and the Automatic Information System for surface search and tracking, said Scott Weinpel, Northrop Grumman's business development director for Fire Scout, in a May 23 interview with Seapower. It can augment the MH-60S Seahawk manned helicopter also deployed with the helicopter squadron detachment.

Weinpel said the COBRA II (Coastal Battlefield Reconnaissance and Analysis II) sensor is being developed to give the MQ-8C a day/night mine-hunting capability over a larger area and in a deeper water column than the COBRA I deployed on the MQ-8B.

The MQ-8C first deployed in December 2021 on the Freedom-class LCS USS Milwaukee (LCS 5) in the U.S. 4th Fleet area of operations.

The Navy has 36 MQ-8Cs on strength. In the Navy's fiscal 2023 budget request, the service plans to place about half of the

MQ-8Cs in long-term preservation, Weinpel said, attributing the decision to the Navy's budget priorities.

"We really are hoping that, with our mission extension efforts and the capabilities and enhancements that we want to incorporate with Fire Scout, that the future looks bright, especially as we look towards the future [Constellation-class] frigate, where Fire Scout is incorporated into [the Navy's] Capabilities Development Documents for FFG 62," he said. "We fully expect that we will be a part of that requirement.

"It would be an appropriate time to pull those [MQ-8Cs] out of preservation and incorporate them with that [frigate] fleet," he said, noting that the MQ-8C could easily pivot to the antisubmarine warfare mission set, deploying sonobuoys and relaying the acoustic data that they would collect to the mother ship or another ASW platform.

Weinpel also said Northrop Grumman could relatively easily restart production of the MQ-8C if required.

He also confirmed the Navy's decision to accelerate retirement of its fleet of MQ-8Bs to fiscal 2023 from 2024, also a result of budget pressure. He said the retired MQ-8Bs could be adapted to homeland security roles, including service with Customs and Border Protection.

Weinpel said the MQ-8C performed well on its first deployment.

"We had great feedback from the operators of the HSC-22 detachment," he said. "They were able to use the radar and EO/IR, [and] had great TCDL [Tactical Common Data Link] operational use, so they were able to fly out to the maximum range of the Fire Scout and then they were also distribute some of the information that was getting down to the Fire Scout control station to other areas of the ship where it became relevant as they were able to conduct some counter-narcotics missions."

Earlier this month, an MQ-8C provided bomb hit analysis for a Hellfire Longbow missile shoot from the Independence-class LCS USS Montgomery (LCS 8).

Keel-Laying for Columbia SSBN Set for June 4



An artist's rendering of the future U.S. Navy Columbia-class ballistic missile submarines. *U.S. NAVY* WASHINGTON – The keel-laying ceremony for the first newgeneration nuclear-powered ballistic-missile submarine (SSBN) will take place June 4.

The keel-laying date for the future USS Columbia (SSBN 826)

was mentioned by Rep. Joe Courtney, D-Connecticut, during a May 18 hearing of the Seapower and Projection Forces subcommittee of the House Armed Services Committee. The ceremonies will be held at the General Dynamics Electric Boat Shipyard at Quonset Point, Rhode Island.

The date was announced to employees of Electric Boat the same morning. The missile compartment and other components are built at Quonset Point. Final assembly of the submarine will take place at the Electric Boat facility in Groton, Connecticut.

HII's Newport News Shipbuilding in Newport News, Virginia, builds 22% of the submarine, including the bow and stern.

General Dynamics Electric Boat was awarded a \$5.1 billion contract in September 2017 to complete the design of the lead boat and in November 2020, the company received a nearly \$9.5 billion award for construction and test of the USS Columbia and lead work on the USS Wisconsin. Including the Columbia, hull numbers SSBN 826 through 837 have been reserved for the new class, which previously was known as the Ohio-class Replacement Program.

The Columbia design features a new reactor with a core designed to last the life of the boat. The Columbia class also will feature an X-stern plane configuration with a waterjet propulsor, electric drive and integrated power system, a sixmast sail with sail planes and a large-aperture bow sonar. The subs will retain the Trident D5LE missile system.

Advance construction of the Columbia began in 2019 and delivery is expected in 2027. The first Columbia SSBN is scheduled to be on patrol in fiscal 2031 to maintain the undersea leg of the nation's nuclear deterrent force.

The Columbia class is to completely replace Ohio class SSBNs by 2039.

Marine Corps to Neck Down Operational Support Aircraft Types; Increase Indo-Pacific Capabilities



UC-12W U.S. MARINE CORPS

ARLINGTON, Va.—The Marine Corps plans to neck down the number of types of operational support aircraft (OSAs) over the next decade in order to achieve economies with reduced operating costs while increasing capability. The Corps also plans to increase its OSA capabilities in the Indo-Pacific region.

"OSA directly provides an economical and efficient alternative for the movement of personnel and cargo by reducing the burden that small payloads place on large tactical aircraft," the recently released 2022 Marine Corps Aviation Plan said. "Moving high volumes of small payloads to widely dispersed Marine air-ground task force (MAGTF) elements poses logistical challenges for Marine Corps aviation; OSA relieves this burden. Marine Corps OSA units perform the same airlift missions whether deployed or at their home stations. Unpredictable, short notice movements are not compatible with the United States Transportation Command's and United States Air Force's airlift missions or commercial route structures. This flexibility is vital to MAGTF logistics, communications and security in all phases of deployment."

The Marine Corps operates 27 OSAs and keeps two of those deployed to support Marine Forces Europe/Africa and Marine Forces Central Command. The Corps plans to replace four UC-12F, two UC-12M, and 10 UC-35D aircraft a total of 28 UC-12Ws including eight already on strength. The current program of record for UC-12Ws is 12 aircraft.

"The cost of sustaining UC-35s is increasing and the USMC is looking to replace the UC-35 fleet with UC-12W," the aviation plan said. "This will require an increase to the program of record of UC-12Ws to 28. Divestment of UC-35s will be based on the procurement and delivery of the UC-12Ws."

The Marine Corps operates one transport squadron, VMR-1, which flew two C-9B Skytrain II aircraft from Joint Base Andrews-NAF Washington, Maryland, until 2017, when the squadron moved to Naval Air Station-Joint Reserve Base Fort Worth, Texas, to provide crews to share C-40A Clipper transports with Navy Fleet Logistics Support Squadron 59. VMR-1 is receiving two C-40As of its own this fiscal year. The squadron will move to Marine Corps Air Station Kaneohe Bay, Hawaii, by fiscal 2024 to replace the two C-20G Gulfstream IV transports there that support the Indo-Pacific Command.

Pappano: Studying 'Shortish' Life Extension of Ohio SSBNs as Risk Mitigator



The Ohio-class ballistic-missile submarine USS Wyoming (SSBN 742), supported by USNS Black Powder (T-AGSE 1), prepares to execute an exchange of command and crews at sea. This regularly scheduled exchange of command at sea demonstrates the continuity and operational flexibility of our sea-based nuclear deterrent operations and our ready, reliable ballistic-submarine force. The efficiency of exchanges of crews at sea allows Sailors to reunite with their families and provides a ready, resilient submarine force. U.S. NAVY / Mass Communication Specialist 2nd Class Aaron Xavier Saldana ARLINGTON, Va. - The U.S. Navy admiral in charge of procuring and sustaining the Navy's ballistic-missile submarines (SSBNs) said the Navy is studying possible short service-life extensions of some Ohio-class SSBNs and even the Ohio-class guided-missile submarines.

The Ohio-class SSBNs are scheduled to be replaced by the Columbia-class SSBNs now under construction. The first Columbia SSBN is scheduled to be on patrol in fiscal 2031 in order to maintain the undersea leg of the nation's nuclear deterrent force. The margin available in the schedule for the Columbia program is tight.

"Because it is the prudent thing to do, we are evaluating potential – not class extensions – but individual hull extensions for up to five of our Ohio-class SSBNs," said Rear Adm. Scott Pappano, the program executive officer for strategic submarines, speaking May 12 in a webinar of the Advanced Nuclear Weapons Alliance Deterrence Center.

The Ohio-class SSBNs were built for 30-year service lives, which were lengthened to 42 years through an extension program.

"It's very hard to get past 42 years," Pappano said. "We're going to at least evaluate that in the background. The first time we'd actually have to start thinking about doing that – to actually do one – would be in the FY29 time frame. So, we're doing the evaluations right now on what it would take to do a 'shortish' repair availability to extend those ships for a couple of years as a risk mitigator, if need be. My goal is to not have to do that, but we want to understand the opportunities and risks associated with that short extension of the Ohio if we need to go do that, depending on what the world situation looks like at the end of the '20s and into the '30s."

The admiral said the Ohio class has been upgraded with a modernized Strategic Weapon System and COTS [commercial-off-the-shelf] systems and sensors.

"That class is doing very, very well," he said.

Pappano also said that "as part of that we'll also evaluate the SSGNs [Ohio-class guided-missile submarines] right now. That's a bit more of a challenge because those ships are operated vigorously than the SSBNs are in the current roles they have right now, but we will continue to look forward to doing that.

"Eventually, the Virginia-class [SSN] VPM [Virginia Payload Module] capability will supplant much of that [SSGN] missile inventory," he said. "Until that comes online, we want to make sure we have the missile shooter capability in the SSGNs for as long as we can, but it's going to be a delicate balancing act of maintaining the current SSBN fleet versus extending the SSGN fleet. One of the things we're looking at right now as we go forward is to make sure we provide as much capability to the warfighters as we can at the right amount of risk."

Ingalls Shipbuilding: Ready to Take on More Navy Shipbuilding



USS Fort Lauderdale was translated via Ingalls' rail car system to the floating dry dock prior to launch. The dock was moved away from the pier and then flooded to float the ship. With the assistance of tugs, USS Fort Lauderdale came of the dock on March 29. HII / Lance Davis ARLINGTON, Va. – Ingalls Shipbuilding, HII's builder of surface warships, has the industrial facilities and workforce to add to the capacity of its portfolio, a senior Ingalls official said.

"We have the ability to take on more work that we do today," said George Nungesser, vice president for program management at Ingalls, speaking May 11 to reporters at the Modern-Day Marine Expo in Washington.

Ingalls' 11,500 workers are building Arleigh Burke-class guided-missile destroyers, Legend-class national security cutters, America-class amphibious assault ships (LHAs), and Flight I/II San Antonio-class amphibious transport dock ships (LPDs). They also are activating the combat system of the third Zumwalt-class guided-missile destroyer. Nungesser said that Ingalls has three LPDs under construction. LPD 28, the future USS Fort Lauderdale, will sail away from the shipyard for commissioning in July. Nungesser said this LPD represented the best cost and schedule performance to date in the LPD 17 program.

LPD 29, the future USS Richard M. McCool Jr., was launched in January and is 75% complete. Nungesser said it would be delivered to the Navy by the end of 2023.

LPD 29 and LPD 30 are transition ships to the Flight II version of the class.

LPD 30, the future USS Harrisburg, is 25% complete.

Fabrication of LPD 31, the future USS Pittsburgh, is scheduled to begin in September.

LPD 32 has been requested by the Navy in the 2023 budget. However, the budget plan would truncate the LPD 17 program with LPD 32 being the last to be procured. The Marine Corps has listed advance procurement funding of an additional ship, LPD 33, in its Unfunded Priorities List for 2023.

Nungesser said the Navy did a good job with the technology transition to the Flight II ships, including accommodation of the SPY-6(V)2 active electronically scanned array radar and the CH-53K helicopter.

Ingalls completed the post-shakedown availability of the America-class LHA USS Tripoli (LHA 7), work which including modifying the ship to operate F-35B Lightning II strike fighters.

LHA 8, the future USS Bougainville, is 50% complete.

LHA 9 was authorized and funded in fiscal 2021.

Nungesser said that Ingalls has a solid backlog of work in the short term and is working to modernize its facilities and is working closely with its vendors to sustain the industrial base. Ingalls is in discussion with its vendors to get price quotes for LPD 32.

He said that it would be ideal for the workforce to have the LPD production centered on building one every two years and LHA production every four years.

Ingalls wants to be the builder of the future Light Amphibious Warship, Steve Sloan, Ingalls' LPD program manager, also speaking in the roundtable.

CNO: Keep R&D Alive for Nuclear Sea-Launched Cruise Missile



A Tomahawk cruise missile is removed from Los Angeles-class attack submarine USS Asheville at Polaris Point, Guam. An SLCM-N would occupy the place in naval armament formerly occupied by the now retired nuclear-armed version of the Tomahawk. U.S. NAVY / Mass Communication Specialist 1st Class Victoria Kinney

WASHINGTON – The Navy's top officer did not request any funds for procurement of the Sea-Launched Cruise Missile – Nuclear (SLCM-N) in the 2023 budget proposal but would like to fund a small amount of research and development to keep the industrial base in place should the missile be funded in the future.

Testifying May 11 before the House Armed Services Committee, Chief of Naval Operations Adm. Michael Gilday said that "having served on a nuclear-capable surface ship in the late 1980s, that mission does not come without a cost. There is a significant amount of attention that has to be paid to any platform that carries that type of weapon in terms of training, in terms of sustainability, in terms of reliability, in terms of the force's readiness to be able to use them and be able to conduct that mission. I'm not convinced yet that we need to make a \$31 billion investment in that particular system to close that particular gap.

"It makes sense to me that we keep a small amount of money against R&D to keep that "warm,' if you will, within the industrial base, while we get a better understanding of the world we live in with two nuclear-capable peer competitors," Gilday said. "At the same time, the fact that we're about to put hypersonics into play this year with the Army, in 2025 with the Navy, that's also a deterrent we should factor in the conversation in terms of the investments that we're going to make, in my opinion."

Rep. Doug Lamborn, R-Colorado, addressed the CNO and reminded the officials present that this year the HASC had heard testimony from Chairman of the Joint Chiefs of Staff Gen. Mark Milley, Vice Chairman of the Joint Chief of Staff Adm. Christopher Grady, U.S. Strategic Command Commander Adm. Charles Richard and U.S. European Command Commander Gen. Todd Wolters that "their best military advice was to continue with the SLCM-N program.

"Do you believe that we should continue the program or at least the research so that we don't lose that capability in the workforce and in our labs that's actually proceeding apace right now and, then, from that, make informed decisions about whether or not we want to invest a significant amount of money in that capability understanding what both of those nuclearpowered peers bring to the table?" he said.

Lamborn said that opponents of SLCM-N say the Navy did not have the bandwidth to handle a nuclear cruise missile aboard ships, but he pointed out that the Navy deployed a nucleararmed version of the Tomahawk cruise missile on ships and submarines during and after the Cold War. He asked the CNO if "given the mission of certifying and carrying a SLCM-N, are you confident that the Navy would be up to the task, given that assignent?"

Gilday affirmed that "given the assignment, we would, sir," while again noting the cost. "I think it deserves some study in terms on how we're going to balance that, given other things that we're doing."

Lamborn told Navy Secretary Carlos Del Toro, who also testified at the hearing, that Del Toro's predecessor, "promised certain documents and emails related to the thenrumored cancellation of the SLCM-N program. Last year's NDAA [National Defense Authorization Act] fenced a large amount of money until these documents and the analysis of alternatives for SLCM-N were provided to Congress. We have yet to receive any of this information.

"Despite the proposal in the Nuclear Posture Review to cancel SLCM-N and its being zeroed out of this year's proposed budget request, when can we expect the Navy to comply with our directives and produce these documents?" Lamborn asked.

Del Toro responded that he "was not aware that those documents had not been provided to the Congress, however I will promise you that I will go back and ensure that we do provide necessary required documents that you have requested."

Berger: Holistic Look Needed for Maritime Prepositioning

Force



U.S. Marines with Combat Logistics Regiment 3, 3d Marine Logistics Group and Sailors with Navy Cargo Handling Battalion 1 offload a light armored vehicle from the Bob Hope-class vehicle cargo ship USNS Pililaau (T-AKR 304) during Hagåtña Fury 21 at Naval Base Guam, Feb. 21, 2021. U.S. MARINE CORPS / Lance Cpl. Moises Rodriguez

ARLINGTON, Va. – The Marine Corps' commandant sees a continued need for the Maritime Prepositioning Force in the future as his Force Design 2030 initiative is implemented.

The MPF, managed by the Military Sealift Command, is comprised of two squadrons of ships in full operating status. The squadrons are located at Guam and Diego Garcia. The squadrons carry enough carry enough equipment and supplies to sustain more than 16,000 Marine Expeditionary Brigade and Navy personnel for up to 30 days. The ships can offload equipment at established port facilities or while anchored, using onboard watercraft operated by naval support element forces. The MPS ships complement naval amphibious forces.

Gen. David H. Berger, speaking to reporters May 5 about his update to Force Design 2030, said that "in conjunction with Army prepositioning and the other services' prepositioning, we're going to have to take a holistic look at prepositioning in the future. The current framework, like our current posture around the world, is not set optimally for what the National Defense Strategy requires us to do. So, as we adjust global force posture of the joint force — including the Marines we're also going to need to adjust maritime prepositioning.

"I won't speak for the Army, but I would think for the joint force, those adjustments have to be made in conjunction with each other," Berger said. "There is no possible way you're going to be able to generate all of the airlift that you need to lift all that we're going to need anywhere in the globe. Prepositioning cuts the time frame to respond dramatically. We're going to have to look at MPF and find out how it matches the adjustments we're going to make with global force posture."

Marine Corps Force Design Update Adjusts MV-22 Squadron Force Levels

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An MV-22B Osprey assigned to the Aviation Combat Element from Special Purpose Marine Air-Ground Task Force-Crisis Response-Africa 20.2, Marine Forces Europe and Africa, conducts deck landing qualifications aboard the amphibious assault ship USS Bataan (LHD 5), June 28, 2020. U.S. Marine Corps / Cpl. Tanner Seims

ARLINGTON, Va. – The Marine Corps' Force Design 2030 annual report has announced adjustments in the force levels of its Marine medium tiltrotor (VMM) squadrons that fly the MV-22B Osprey assault transport aircraft.

"We originally planned to divest three MV-22 medium tiltrotor squadrons from the Active Component, which would have resulted in a total of 14 squadrons of 12 aircraft each," said the report, released May 9 by Marine Corps Commandant Gen. David H. Berger. "However, detailed analysis demonstrated that 16 squadrons of 10 aircraft each better satisfies joint force requirements and better supports service needs to organize, train and equip. In particular, this force structure simplifies the formation of a Marine Expeditionary Unit's aviation combat element."

"Quite frankly, it was personnel-driven," said Lt. Gen. Karsten S. Heckl, deputy commandant for combat development and integration, Headquarters, U.S. Marine Corps, and commanding general, Marine Corps Combat Development Command, Marine Corps Base Quantico, Virginia, speaking May 6 to reporters and amplifying the Corps' reasoning for the change in VMM squadron aircraft complement.

"There were many external factors to that primary factor of personnel," Heckl said. "So, there a few levers the commandant can pull on to generate resources. The conclusion that the Headquarters, Marine Corps, staff came to was that manpower was the most appropriate because we were over-sized, we were at an unsustainable number, so that was the logical choice to make."

Heckl said the squadron size of 10 MV-22Bs would give the Corps the flexibility to add more F-35B Lightning II strike fighters to the ACE if it so chose. Currently the ACE typically deploys with six F-35B Lightning II strike fighters or AV-8B Harrier II attack aircraft. "Right now, the MEUs are going out — and it depends whether it's 10 or 12 V-22s when the [MEUs] go out [on deployment]," he said. When we start making every deployment with [F-35Bs] and the possibility that the numbers [of F-35Bs] that would go out — those numbers changing — the 10- [V-22s per squadron] makes all the sense in the world.

"Quite frankly, when you take into the equation the attrition rate, pipeline aircraft, training aircraft, the numbers work out pretty well," he said.

The Marine Corps has cut or is cutting four MV-22B squadrons. The stand-up of VMM-212 was canceled in fiscal 2019. VMM-264 and VMM-166 were deactivated in fiscal 2020 and 2021, respectively. VMM-164 will be deactivated in fiscal 2022. The remaining force will include 14 active-component fleet VMM squadrons, one active-component VMMT fleet replacement squadron and two reserve-component VMM squadrons.

The Force Design annual report also called for an experiment in active-reserve integration of a reserve VMM squadron. The commandant directed the Corps to "perform Active Component/Reserve Component integration proof of concept in 2d MAW [Marine Aircraft Wing] by incorporating VMM-774 into an Active Component Marine Aircraft Group in [fiscal 2023]."

VMM-774 is based at Naval Station Norfolk, Virginia, also the base of two Navy helicopter mine-countermeasures squadrons that have been combined active-reserve squadrons.

Naval Safety Command to

Conduct No-Notice, Short-Notice Inspections



Rear Adm. Frederick R. Luchtman, commander, Naval Safety Command, salutes the sideboys during an establishment ceremony for the Naval Safety Command on Feb. 4. U.S. NAVY / Mass Communication Specialist 2nd Class (SW/AW) Weston A. Mohr ARLINGTON, Va. — The new Naval Safety Command intends to hold no-notice and short-notice safety inspections of Navy commands to identify and understand risk and assess the safety posture of the fleet, the new command's first commander said.

One-star Rear Adm. Fredrick "Lucky" Luchtman, speaking May 5 in a session of the U.S. Navy Memorial's SITREP Speaker Series, also said the new command will become a two-star billet soon, filled by a former carrier strike group or expeditionary commander, thereby giving greater perspective "on all things safety throughout the fleet."

The Naval Safety Command was established from the old Naval Safety Center on Feb. 7, 2022, to elevate the attention to safety, assessment of it and accountability for it in the fleet. All of the former directors of the Naval Safety Center since it was established in 1951 have been aviators, as is the first current commander of the Naval Safety Command, Luchtman. During the 1950s the mishap rate of naval aviation as it upgraded from piston-engine aircraft to jets skyrocketed and the Navy launched the center to assess the causes and propose solutions.

Luchtman reports directly to the chief of naval operations, a reflection of the Navy's increased emphasis on safety, especially in the wake of the fire that destroyed the amphibious assault ship USS Bonhomme Richard.

The admiral estimates that mishaps cost the Navy \$1 billion per year in loss of aircraft, steaming time for ships and personnel costs, among other costs. The year 2020 was even more costly with the loss of the Bonhomme Richard.

The Naval Safety Command will be sending assessment teams out to the fleet to determine the effectiveness of the safety management systems. The command is developing "a cadre of professionals who can truly assess compliance." Luchtman said one of his goals is to streamline and simplify the safety management system by identifying risk, communicating it and holding accountability at the right level.

"The accountability piece is absolutely key," he said. Referring the Bonhomme Richard incident, he said, "the system isn't healthy as it could be."

Luchtman mentioned one demographic that has a bearing on automotive safety in the Marine Corps, a service that makes heavy use of motor transport. He said 25% of Marine Corps recruits did not have a driver's license, a percentage far large than a generation ago.

Luchtman's successor will be a surface warfare officer, Rear Adm. Christopher M. Engdahl, currently commander, Expeditionary Strike Group 2 and commander, Amphibious Force, U.S. 7th Fleet.